

# COMMERCIAL REFRIGERATION & AIR CONDITIONING

DECEMBER 1955



Put Your Service Operations on  
a C.O.D. Basis .....page 24

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Selling Job for You .....page 28

Protect Your Servicemen from  
Potential Hazards .....page 29

Year-Round Conditioning Needs  
Year-Round Service ....page 49

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of Service Firm .....page 52

Finish Jobs in One Call with a  
Well-Designed Truck ....page 55



SILVENS NICE  
UNIVERSITY MICROFILMS  
313 N FIRST ST  
ANN ARBOR MICH  
RIF

**MERCHANDISING, SELLING, INSTALLATION AND MAINTENANCE OF  
AIR CONDITIONING AND COMMERCIAL REFRIGERATION EQUIPMENT**



# SETTING THE PACE IS TRADITIONAL WITH COPELAND

'Way back when we first announced the COPELAMETIC, its potential was recognized quickly by refrigeration people. The original "accessible hermetic" enjoyed immediate acceptance, because it filled a practical need. We're complimented that it "sets the pace" for others to follow.

Basic ingredient for engineering progress is to know what's needed. Copeland has done that by working closely with manufacturers, dealers and users. We've lived with your problems. We're convinced that it pays off for everyone.

## Now, Suction Cooling Extends Range of Air-Cooled Units for Air Conditioning

One of the frequent problems in the rapidly expanding, central air conditioning market has been water requirements. At Copeland we met this difficul-

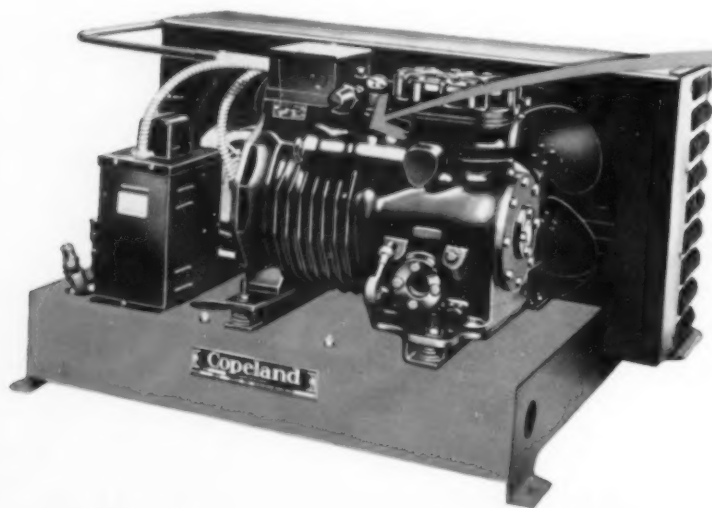
ty head on, and our answer is in condensing units with suction-cooled motor-compressors in sizes through 5 H.P.

The Copelametic line includes a range of smaller size units using the principle of suction cooling. They afford greater flexibility of installation, since no water is needed. Now the larger sizes make possible even wider applications.

The new 2, 3 and 5 H.P. suction-cooled Copelametics are designed especially for air conditioning and other high suction pressure installations. Over-size, finned-tube condensers on these models insure maximum efficiency in high ambient temperatures.

New specification sheets on Copelametic suction-cooled motor-compressors and condensing units give all the facts. Send for your copies TODAY.

**Copeland**  
DEPENDABLE *Electric* REFRIGERATION



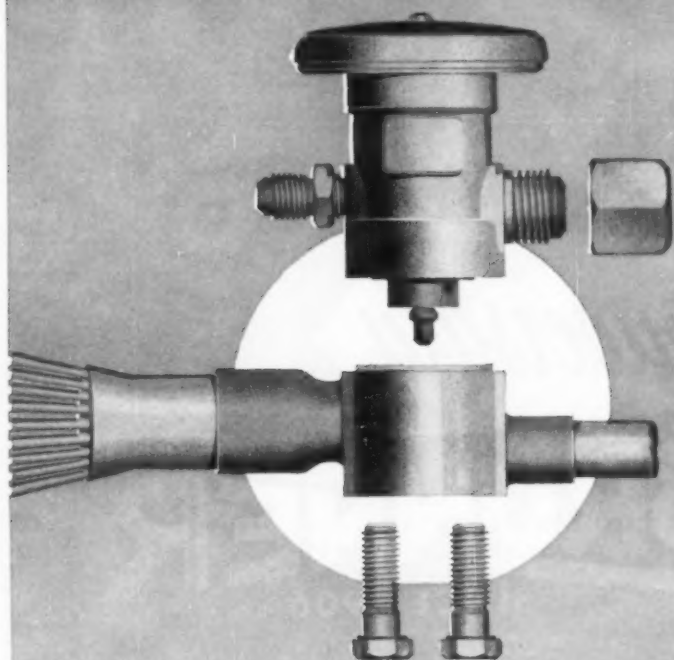
THIS  
MAKES THE  
DIFFERENCE

### MODEL ZR-300H

Air-cooled unit with Suction-cooled  
Copelametic motor-compressor

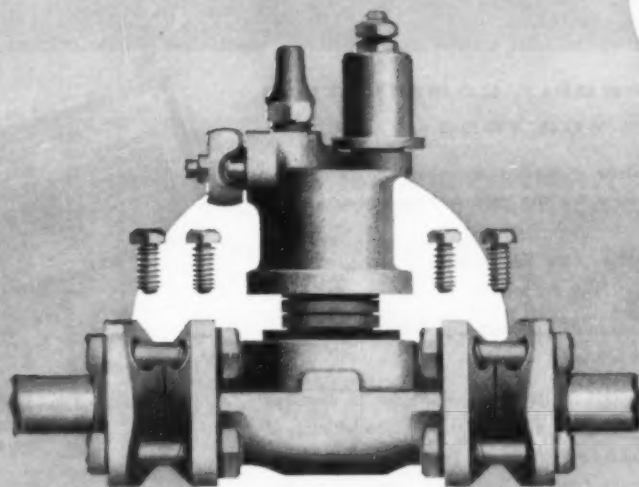
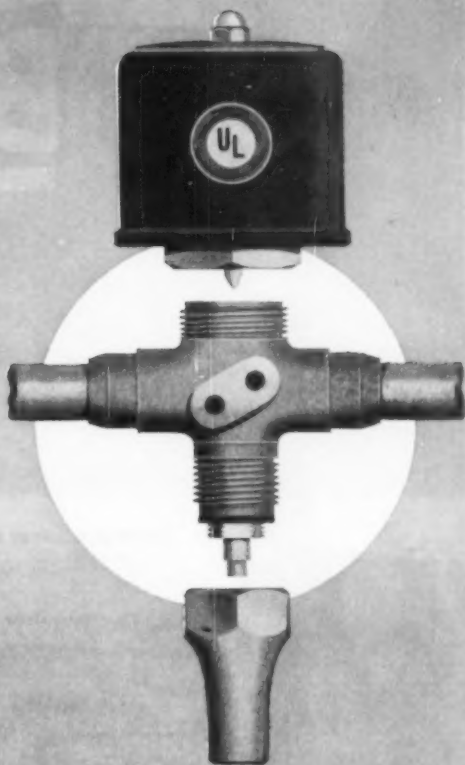
**COPELAND REFRIGERATION CORPORATION • SIDNEY, OHIO**

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you never  
break the connections!  
you save service time  
all along the line

ALCO VALVES COME APART QUICK



TAKE THEM APART  
YOURSELF  
see your **ALCO**  
wholesaler

Designers and Manufacturers of Thermostatic  
Expansion Valves; Evaporator Pressure  
Regulators; Solenoid Valves; Float Valves;  
Float Switches.

ENGINEERED ... FOR SERVICE ... FOR LIFE



**ALCO VALVE CO.**

843 KINGSLAND AVE. • ST. LOUIS 5, MO.

6725



**IDEAL PROFIT COMBINATION  
FOR 1956!**

**The Brunner Product-Service Package  
...backed by 50 Years Experience**

As we approach 1956...our 50th Anniversary year...we pause only momentarily to salute the past.

Our idea of an Anniversary celebration is to make available to you the finest products in Brunner history.

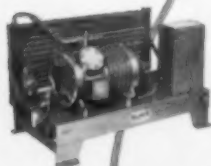
Look to Brunner in 1956 for the most complete line of Open-Type and Brunner-Metic Refrigeration Condensing Units...a full range of Air Conditioning Condensing Units...and the Brunner Warranty Program serviced by 166 Authorized Wholesalers, from coast to coast.

It's your Brunner Product-Service Package for Bigger Profits!

**BRUNNER MANUFACTURING COMPANY, UTICA, NEW YORK**

The Brunner Co., Gainesville, Ga.

In Canada: Brunner Corp. (Canada) Ltd., Toronto, Ontario





# COMMERCIAL REFRIGERATION & AIR CONDITIONING

DECEMBER 1955 • VOLUME 12 • No. 12

## FEATURE ARTICLES

- 26 PUT YOUR SERVICE ON A C.O.D. BASIS . . .** This commercial refrigeration dealer did, and found that it made good business sense.
- 28 YOUR SERVICE SHOP CAN SELL . . .** if you keep it as clean and orderly as this dealer does and then show it off to your customers and prospects.
- 30 PLAY IT SAFE! . . .** Some phases of refrigeration installation and maintenance work can be dangerous, so here are some practical pointers on how to protect service personnel against these potential occupational hazards.
- 32 GREATER EFFICIENCY WITH COPPER TUBE . . .** Here's how the use of proper practices in bending and joining refrigerant tubing can not only cut installation and service costs but also result in more satisfactory jobs.
- 34 TIME CONTROLS . . .** Part I of a practical discussion of the applications of such controls in the refrigeration and air conditioning field.

## Air Conditioning Section

- 49 TWICE A YEAR IS NOT ENOUGH . . .** to service year-round air conditioning systems. Here are some specific recommendations on what additional periodic service is advisable.
- 52 NOW YOU'RE TALKING! . . .** Use of two-way radio has helped this air conditioning contractor increase the efficiency of his service organization by 15%, and keep 5000 customers satisfied.
- 55 FINISH THE JOB IN ONE CALL . . .** You can if your service vehicles are as well planned and equipped as those designed and used by this contractor.
- 56 AIR CONDITIONING FOR INDUSTRIAL PROCESSING . . .** Installations of this type often involve the application of standard equipment in unusual ways. Here are some of the tricks you can use to accomplish this end.

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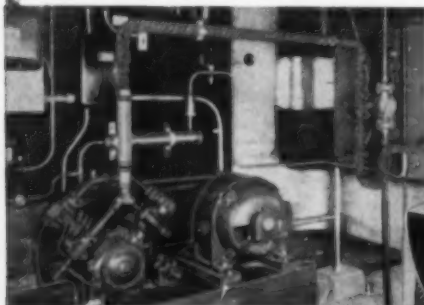
# Put a PERMANENT STOP to Condensation Drip Rust and Corrosion

WITH THIS PLIABLE,  
CORK-FILLED,  
MOISTURE-PROOF,  
SELF-ADHERING  
SEALER



Cold water pipe or tubing condensation drip is messy, costly, often dangerous. Unheeded, the result is loss of valuable equipment, piping and connections rust and corrode, requiring frequent replacement, and hazardous conditions exist.

NoDrip Tape has been successfully used for years to *correct* and *control* this needless waste. Easily applied by winding spirally around pipes and tubing, NoDrip Tape becomes a *permanent* sealed jacket...without "extra" vapor-seal tapes or overwraps. Requires no bands, brads or fasteners because it's self-adhering. In addition, NoDrip Tape holds temperatures more steady, reduces icing and frosting of lines. Equally effective on any pipe or tubing, iron, brass, copper or other alloy.



## Typical Coverage Per Roll

I.D. Iron Pipe:	10' of 1/2"
	8' of 3/4"
	6 1/2' of 1"
O.D. Copper Tubing:	13' of 1/2"
	11' of 3/4"
	9 1/2' of 1"
	8 1/2' of 1 1/4"



**\$1.69** list a roll Higher west  
of Rockies and Canada.  
(Subject to usual trade discounts)

## FREE! Bulletin D-40

J. W. MORTELL COMPANY  
553 Burch St., Kenosha, Ill., Dept. 12

Please send me FREE copy of Bulletin D-40

Name.....  
Address.....  
City..... State.....

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MAGAZINE IS PAID FOR YOU?

**You're Chosen Because You Qualify!**

COMMERCIAL REFRIGERATION & AIR CONDITIONING readers are carefully selected by progressive independent wholesalers of refrigeration and air conditioning parts and supplies because they are 100% interested in the merchandising, sale, installation and maintenance of refrigeration and air conditioning equipment.

COMMERCIAL REFRIGERATION & AIR CONDITIONING is sent **only** to qualified readers. COMMERCIAL REFRIGERATION & AIR CONDITIONING goes to persons whose specifying and/or buying responsibilities are guaranteed by local refrigeration and air conditioning equipment wholesalers.

Your local parts wholesaler, who **knows** your interest in refrigeration and air conditioning, who **knows best** your buying habits, who **knows most** what you like to read—pays us for your subscription to COMMERCIAL REFRIGERATION & AIR CONDITIONING.



*That's Franchise Circulation . . .*

*that's why YOU get this magazine without charge*

**Commercial Refrigeration & Air Conditioning**

1240 ONTARIO STREET

CLEVELAND 13, OHIO



Stocks Handy  
Everywhere!...

**genetron**<sup>®</sup>

**Super-Dry Refrigerants**



**No Matter Where You Are**

**There's a genetron Wholesaler Near You!**

**Coast-to-coast**, America's leading Refrigeration and Air Conditioning Wholesalers feature "Genetron" Super-Dry Refrigerants. There's one as near to you as your telephone ready to supply you with complete stocks of "Genetrons" and with up-to-the-minute data on their uses.

**Remember**—"Genetron" Refrigerants are super-dry! Their moisture content is exceptionally low; their over-all purity, extremely high. They meet the industry's most exacting refrigerant specifications... are freely interchangeable with comparable fluorinated hydrocarbon refrigerants produced by any other manufacturer. Follow the industry-wide trend to Super-Dry "Genetrons." Insist on "Genetrons" when buying refrigerants.

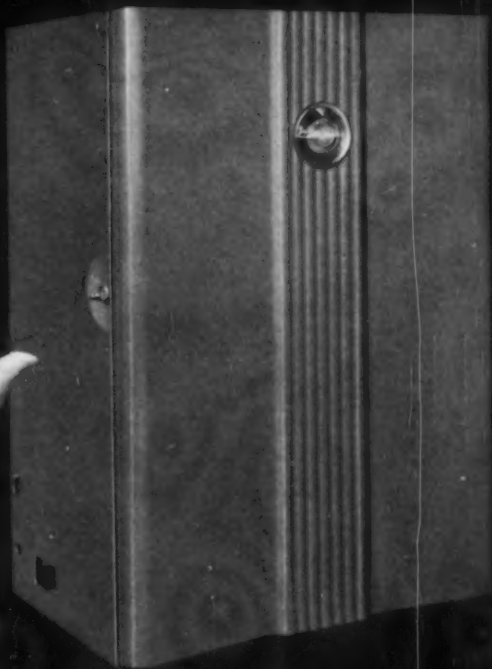
"GENETRON" DEPARTMENT  
**GENERAL CHEMICAL DIVISION**  
ALLIED CHEMICAL & DYE CORPORATION  
40 Rector Street, New York 6, N. Y.  
Offices in principal cities



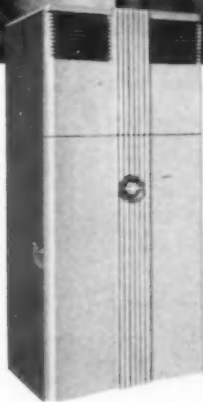
Circle No. 6 on Reader Service Card



"It's great to be a Carrier dealer—  
with this new Weathermaker to sell!"



You get in... you get out... you get your money fast!  
You see 'em... you show 'em... you sell the job fast!



**New Weathermaker** with matching plenum makes a handsome, efficient package as an in-space air conditioner. Furniture can be placed against the unit—no return air grilles or openings to collect dust.

This is it, man! A dream of an air conditioner! Looks like a million. Loaded with sales advantages. *And designed for lower installation costs!*

**Take wiring, for example:** Electrical center is pre-wired. You make connections at one outlet box on the side of the unit!

**Alternate fan discharge:** Invert fan platform for top or back air discharge. No cutting or patching of casing is required!

**Built-in heating coil space:** Coils can be installed right in the casing without alteration. They heat the same area cooled!

**And look at the help you get from your Carrier distributor:** Complete course in how to sell the Weathermaker... the industry's most complete line of water and air cooled self-contained equipment... Weathermaker Handbook for sure-fire selling... low-cost finance and stock-ordering plans... on-the-spot assistance in engineering, sales and advertising!

Write us today or check your phone book for the name of the distributor who will tell you in dollar-doubling detail how you can see 'em and show 'em and get your money fast! Carrier Corporation, Syracuse, New York.



air conditioning • refrigeration • industrial heating

Circle No. 7 on Reader Service Card

AMERICA'S NEW PACE-SETTER FOR 1956!

# Chip-Freeze

## AUTOMATIC ICE FLAKER

with **5** SCIENTIFIC innovations  
that will make  
SALES history!



### 1. DESIGNED TO MAKE ICE CHIPS ONLY!

Advanced mechanical design features a mono-structure ice-making assembly which assures sparkling-pure ice flakes at all times! New design eliminates "air lock" problem forever!



### 2. NO DEEP REACHING!

Ice chips are always at your waist level! No stretching or stooping anymore (as with conventional equipment). All the ice flakes you want—easily accessible! Another reason why CHIP-FREEZE is ideal for any establishment where ice flakes are required.



### 3. MOST SANITARY UNIT MADE!

NEW ice is produced at the TOP of the CHIP-FREEZE unit so that there is no possibility for accumulation or decay of old ice! (Most equipment today has ice storage section at bottom of unit; thus, scum and dirt formations in that section contaminate fresh ice easily.)



### 4. A COLOR FOR YOUR DECOR!

Choose from six new decorator colors to harmonize with any interior, any place, anywhere! Space-saving cabinet design in beautiful hi-bake enamel color schemes makes CHIP-FREEZE unit adaptable for any location!

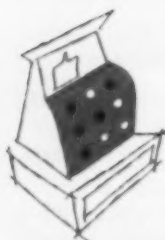


### 5. MAXIMUM OUTPUT GUARANTEED!

Up to 95% savings! Imagine, 560 lbs. per day—ice flakes for as little as 2¢ per bushel or 6¢ per hundred lbs. (depending on local power and water rates)! Pay only for the ice you need. Handling and labor costs cut drastically.

### priced below competition!

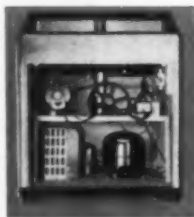
CHIP-FREEZE pays for itself out of savings. Imagine! Superior quality . . . and still priced below competition. You can own the ice-making machine market in your area and show profits you never believed could exist in this field . . . with America's fastest growing year-round business! Another sales feature: CHIP-FREEZE ICE CHANNELS are used in refrigerated display cases to avoid spoilage and enhance the appearance of produce or meat.



### fully automatic

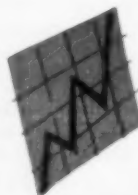
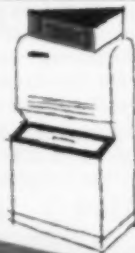
### AS EASY AS "A-B-C" TO INSTALL AND MAINTAIN!

- Mechanism is easily accessible from front and rear
- Machine turns itself on and off
- Fills itself automatically as ice is used
- Minimum cost installation
- Ideal for any type of water system
- No costly plumbing or special material required
- Low-pressure cut-out protection in event water supply system is temporarily interrupted
- Compressor is extremely well ventilated
- Nothing to wear out
- Only one moving part under refrigeration
- No complicated controls.



### take advantage of optional "extra profits" advertising feature!

Special rotating display apparatus atop each CHIP-FREEZE machine can be used to boost your own sales. Or, if desired, this display space can be sold to one of your suppliers to advertise his product and earn you extra profits at same time!



### sales-tested plan

### MAKES SELLING "CHIP-FREEZE" SIMPLE, PROFITABLE!

The "CHIP-FREEZE PLAN" takes all the mysteries out of selling ice-making equipment and diminishes sales resistance. We will supply you with all promotional material to create leads as well as inquiry-tested ads and mailers. The "CHIP-FREEZE PLAN" is backed by a national advertising and public relations program and means a new life for history-making ice-making sales!

Chip-Freeze

**COLD CORPORATION OF AMERICA**  
Manufacturers of Ice Making Equipment

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DECEMBER, 1955 • COMMERCIAL REFRIGERATION



chipped ice  
is always at your  
**WAIST LEVEL**  
...and  
"Deep-Reaching"  
forever!

**EYE APPEAL,  
SALES APPEAL,  
ICE APPEAL for:**

- Supermarkets • Restaurants
- Dairies • Bakeries • Hotels
- Fish and poultry markets
- Fresh produce markets
- Florists • Hospitals
- Soda Fountains
- Retail Stores
- Clubs

Wherever and whenever flaked  
ice is needed--the market will  
look to "CHIP-FREEZE"

**EXCLUSIVE FRANCHISES STILL AVAILABLE!**

We're looking for SOUND manufacturer's representatives, distributors and dealers interested in building a volume with a substantial, nationally-recognized manufacturer to meet the tremendous growing demand for automatic ice-making equipment.

**WRITE, WIRE OR CALL TODAY!**

**COLD CORPORATION OF AMERICA**

1371-89 N. North Branch St.  
Chicago 22, Illinois

Gentlemen:

I am interested in knowing more about "CHIP-FREEZE" automatic ice flakers.

☐ MFG. REP.    ☐ DISTRIBUTOR    ☐ DEALER

Others, please specify \_\_\_\_\_

Name \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

City \_\_\_\_\_

Zone \_\_\_\_\_

State \_\_\_\_\_

**COCORA** General Offices: 1371-89 N. Branch St.  
Chicago 22, Ill. Michigan 2-4816

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# ABOUT PEOPLE

**Chester M. Brown** has been named president of General Chemical Div., Allied Chemical & Dye Corp.



C. M. Brown

**Mark M. Bid-dison**, who has headed that division since 1951, will continue with the company in an advisory capacity and handling special assignments. Brown began his career with General Chemical Div. as a production trainee at the East St. Louis, Ill. works, in 1929. He was works superintendent in 1938 when he was transferred to the executive headquarters of the division in New York. Subsequently he became sales and production head of the reagent and fine chemicals line, director of sales, vice president, and in 1952 executive vice president.

**Terrell J. Small** has been appointed district sales representative of Copeland Refrigeration Corp. for Texas and Oklahoma. He was formerly manager of the air conditioning department of Lennox Furnace Co., and has been active in air conditioning and refrigeration for eight years.



**Don Bayley Dunn** has been named Canadian sales manager for Fogel Refrigerator Co. Dunn has been active in the Canadian commercial refrigeration industry for the past 20 years and was formerly associated with E. J. Wright Utilities, Ltd.

**R. G. Alexander** has been named sales manager of the commercial whole-sale department for Kelvinator Div. of American Motors Corp. He succeeds **E. G. Haight**, who was named sales engineer in the contract sales department which is expanding its activities. Alexander's new responsibilities will include sales supervision of: soft drink vending machines and beverage coolers to soft drink bottlers; condensing units through Kelvinator's field organization and independent wholesalers; ice cream cabinets and other refrigeration equipment to restaurant and hotel supply companies.



R. G. Alexander

Sporlan Valve Co. has recently appointed **Alan Owens** to take over its new Washington, D.C. of-



T. Gislason

A. Owens

fice and **Thor Gislason** who will open its new Boston branch. Owens will cover Washington and surrounding area formerly serviced from Philadelphia, and Gislason will cover Boston and environs previously handled out of the Mt. Vernon, N. Y. office.

**Ralph G. Griffin** has been appointed manager of the Cincinnati district office of Worthington Corp. He has served in various capacities since joining the corporation in 1930, and has been assistant manager of the Cincinnati office since 1953. Griffin succeeds **Earle W. Vinnedge** who has been named special representative of the Cincinnati office. Vinnedge

has been with Worthington for the past 40 years and has served as Cincinnati district office manager for 28 years.

**J. Norman Schnur**, who began his career at Servel, Inc., as an order clerk 11 years ago, has been promoted to a district manager in the company's commercial refrigeration division. Schnur's district will include the states of Pennsylvania, New Jersey, Maryland, Delaware and Virginia. His headquarters will be in Philadelphia. In commercial refrigeration work throughout his Servel career, Schnur most recently had served as assistant sales manager.



**Jack F. Wasson** has been appointed sales engineer in eastern Michigan and northwestern Ohio for Bush Mfg. Co., and Heat-X, Inc. He had formerly been associated with the Detroit branch of Frigidaire Sales Corp.

Brewer-Titchener Corp., has announced the appointment of **Chester A. Hawkes** as chief engineer for its refrigeration division. He will be in charge of new product development and will headquarter at the firm's New Milford, Pa. plant. Hawkes had previously been employed by Deepfreeze Appliance Div., Motor Products Corp. as refrigeration design engineer.



**Andrew C. Freimann** has been named vice president in charge of marketing and **R. K. Serfass** and **R. F. Lauer** were recently elected new directors of York Corp. Freimann was former-

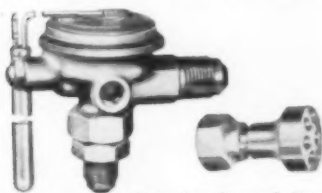


**YOUR BEST SOURCE**

**FOR A FULL LINE OF REFRIGERATION CONTROLS—**

# DETROIT CONTROLS

## THERMOSTATIC EXPANSION VALVES



Complete line of distributors, up to 18 passes.

A broad line of valves with capacities to 25 tons F-12 and 40 tons F-22.

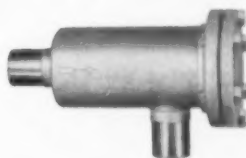
## SOLENOID VALVES



A broad line of valves with capacities to 50 tons F-12 and 60 tons F-22.

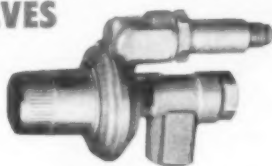
Special purpose miniature solenoid valves for any application.

## STRAINERS



Most complete line from smallest noncleanable to large "Y" type cleanable strainers up to 3 3/4" ODF connections in some models. Also special ferrous types for ammonia.

## AUTOMATIC EXPANSION VALVES



Extremely sensitive to pressure change and consistent in operation, these valves have various adjustable ranges from 25" vacuum to 100 P.S.I.!

## AUTOMATIC CONTROLS



A wide range of controls for pressure, temperature, dual pressure applications, plus sequence and other special controls.

## AUTOMOTIVE AIR CONDITIONING CONTROLS

Combination by-pass and suction valve with operating cam. These valves are engineered to meet high - performance requirements.



## CRANKCASE PRESSURE REGULATOR



(Hold-back Valve)

**Get the COMPLETE Picture ...  
Use the COMPLETE Line ...**

**See Your DETROIT CONTROLS Wholesaler  
... or write for condensed Catalog 200-D**

**DETROIT CONTROLS CORPORATION**  
5900 TRUMBULL AVE. • DETROIT 8, MICHIGAN  
Division of AMERICAN RADIATOR & STANDARD SANITARY Corporation



Representatives in Principal Cities • Canadian Representatives:  
RAILWAY AND ENGINEERING SPECIALTIES, LTD.,  
Montreal, Toronto, Winnipeg.




**AUTOMATIC CONTROLS for REFRIGERATION**

**AIR CONDITIONING • DOMESTIC HEATING • AVIATION • TRANSPORTATION • HOME APPLIANCES • INDUSTRIAL USES**

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**& AIR CONDITIONING • DECEMBER, 1955**



**ACCURATE IN SIZE  
AND  
TOPS IN QUALITY!**

## Chase® Type L Copper Tube!

It's a sure thing! Your air conditioning and refrigeration equipment will deliver dependable, *peak performance over the years*, when you fabricate with Chase Type L copper tube!

Inside and outside diameters accurate to thousandths of an inch assure proper tolerances for fitting connections. That means extra-easy assembly of finned sections. Smooth interiors of tube and Chase solder-joint fittings insure a steady, even flow of coolants. And for extra cleanliness, you can get Chase Type L copper tube tightly capped at slight extra cost.

Order Chase Type L copper tube, Chase extra-soft copper refrigeration tube and Chase wrought copper solder-joint fittings from the Chase wholesaler near you!

# Chase

**BRASS & COPPER CO.**

WATERBURY 20, CONNECTICUT • SUBSIDIARY OF KENNECOTT COPPER CORPORATION

### *The Nation's Headquarters for Brass & Copper*

Atlanta Baltimore Boston Charlotte Chicago Cincinnati Cleveland Dallas Denver Detroit Grand Rapids Houston Indianapolis Kansas City, Mo. Los Angeles Milwaukee Minneapolis Newark New Orleans New York Philadelphia Pittsburgh Providence Rochester St. Louis San Francisco Seattle Waterbury

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DECEMBER, 1955 • COMMERCIAL REFRIGERATION

ly general sales manager of Delco Appliance Div. General Motors Corp. Both Serfass and Lauer have been with York over 23 years. Serfass was formerly vice president and industrial division manager, and Lauer was vice president and assistant to the president of the company.

**Frank D. Klein** and **Henry Rollens** have been appointed to the newly-created positions of



F. D. Klein

H. Rollens

southwest and northeast regional sales manager, respectively, of the United States Air Conditioning Corp. Rollens was formerly sales supervisor for Carlton-Stuart Corp., New York City air conditioning distributors. With headquarters in New York City, his territory comprises all of New England, New York, northern New Jersey and western Pennsylvania.

Klein was formerly manager of distributor development for the Heating & Cooling Div. of Union Asbestos & Rubber Co. His territory, with headquarters in Dallas, includes Texas, New Mexico, Colorado, Oklahoma, Arkansas, Louisiana and western Tennessee.

**Edward M. Becker** was recently appointed sales manager, refrigeration division of Fedders-Quigan Corp. He had formerly been the company's New York district sales manager.

**Graham B. Neidhardt** has been appointed head of the refrigeration engineering department of Bally Case & Cooler Co. Neidhardt, who is well known in the refrigeration industry, had previously been associated with Sunroc Refrigeration Co.

**Alan S. Decker** has been promoted to vice president in charge



of manufacturing and general engineering by Bush Mfg. Co. For the past year he has been general manager of Heat-X, Inc., a wholly-owned Bush subsidiary located in Brewster, N. Y.

**James T. Obrig** has been named eastern regional sales man-



ager of the heating and cooling division of Union Asbestos & Rubber Co. He will supervise sales of the company's heating and air conditioning equipment along the eastern seaboard, and as far west as Penn-

## top notch refrigeration service men use

### DURO-CHROME

### TOOLS



... do all refrigeration jobs  
get your **DURO-CHROME** catalog

With "Matched Set" Duro-Chrome Tools, every tool feels right. The natural grip and perfect balance make every tool seem "at home" in your hands... whether it's the Duro-Chrome Refrigeration Ratchet Wrench, Flare Nut Wrenches, Socket Sets, or any of the many other Duro-Chrome Tools specially designed for refrigeration service jobs. Your Wholesaler has them all. For the most Complete Line of Refrigeration Service Tools get your copy of the new Duro-Chrome Pocket Catalog that fits your pocket or your kit.

Ask your Duro Jobber for a free copy, or send coupon below to DURO, with 10¢ in coin to cover costs of postage and handling.



**DURO METAL PRODUCTS COMPANY**  
2649 N. Kildare Ave., Chicago 39, Ill.

Enclosed is 10¢ in coin for which please send me my personal copy of the Pocket Size Duro-Chrome Catalog

MY NAME .....

ADDRESS .....

CITY ..... STATE .....

B129R

Also Makers of Nationally Advertised DURO Power Tools

Circle No. 11 on Reader Service Card

sylvania and West Virginia, and will maintain headquarters in New York City. Obrig had formerly been district manager for Typhoon Air Conditioning Co.

**Jack Whiteside**, general manager of Simpson Electric Co., has been promoted to vice president of the parent company, American Gage & Machine Co., in charge of the Simpson Electric Div. Whiteside has been with the company since 1945.

**Glennon J. Doyle** has been named vice-president in charge of operations and



G. J. Doyle

and general manager of C. Nelson

**George E. Dombrowski** has been named personnel director of Copeland Refrigeration Corp. Doyle had previously been vice president

Mfg. Co., and Dombrowski had been personnel manager at Long Mfg. Div., Borg-Warner Corp. for several years.

Ansul Chemical Co. has appointed three new sales representa-



T. O. Lester



E. W. McCoy



W. H. Miller

tives in its refrigeration division to handle expanding sales of its new T-Flo refrigeration driers and Dry-Eye moisture indicator systems.

**Thomas O. Lester** will supervise sales in Tennessee, Kentucky, West Virginia, Ohio, Michigan and western Pennsylvania. **William H. Miller** has been assigned to the New York State and New England territory. **Earn W. McCoy** will cover Texas, New Mexico, Mississippi and Louisiana, with headquarters in Houston.

**Harold E. Straub** has been appointed director of testing and research at a new research laboratory recently constructed by Titus, Inc. Straub had formerly been research associate in the department of mechanical engineering at the University of Illinois.



**W. J. Aulsebrook** has been promoted to manager of quality control for the commercial refrigeration division of Servel, Inc. In

**PAUL SHIRK**  
REFRIGERATOR SERVICE  
720 YALE AVE., FRESNO, CALIF.

October 21, 1954

Highside Chemicals Company,  
Clifton, New Jersey.

Gentlemen:

For a long time I have meant to let you know how much I appreciate your product "Thawzone".

I was instrumental in getting a local refrigeration supply house to stock Thawzone beginning in 1938. Since then I have added Thawzone to probably over one thousand sealed and open refrigeration units. As of this time I have not seen one case of trouble which can be traced to Thawzone.

My bottle of Thawzone suffices for a large stock of dryers which I do not have to carry and, as your ads say, gets plenty quick results. It is rather gratifying to be able to do a difficult job easily, quickly and permanently. Without Thawzone I would not feel nearly so sure of the results I could accomplish.

Very truly yours,  
*Paul Shirk*

**HIS  
STANDARD  
DRYING  
PROCEDURE:  
CAREFUL  
WORKMANSHIP  
AND  
THAWZONE**

### THAWZONE SAVES VALUABLE TIME

You know from experience that other methods usually need a considerable amount of time in order to clear up moisture. That's NOT the case with Thawzone, since it travels quickly throughout the entire system, searching out all moisture and DESTROYING it. This action takes minutes . . . not hours.

The use of Thawzone not only saves your valuable time, but avoids annoying call-backs due to recurring moisture conditions. At the same time, Thawzone neutralizes acids formed by the constant breakdown of oil.



1. Actually destroys moisture . . . not a mere anti-freeze.
2. Scavenges oxygen . . . the only product that eliminates this corrosion-causing chemical.
3. Cannot cause pressure drop.
4. Cannot clog with oil.
5. Does not release moisture when temperature changes.
6. May be used in open or hermetic units containing "Freon", methyl chloride, methylene chloride, or isobutane.
7. Costs only about 8 cents per lb. of refrigerant treated. Used in small amounts.



You can use Thawzone in practically any "Freon" or methyl unit. Your wholesaler has Thawzone. Phone him now. Highside Chemicals Company, a unit of Stewart Industries, Inc., 4 Collax Ave., Clifton, N. J.



his new post, Aulsebrook will be responsible for the quality of incoming materials, products in process, and finished products. He has served in various capacities since joining the company 29 years ago.

**Chester A. Garland** has joined Donovan Associates, manufacturers representatives in New England for Acme Industries, Inc. and Kramer-Trenton Co. He will serve as sales engineer covering the Boston, Providence, and Worcester areas. Garland formerly held the position of assistant to the president at Baker Refrigeration Corp.



**B. J. Gill** has been named northwest district manager by Century Electric Co. He will headquarter at the company's newly opened district office in Spokane. He will be aided in serving the northwest area by Ralph Price, manager of Century's Seattle office. The new office will provide complete warehouse stock of Century motors for users in Idaho, western Montana, Oregon, and Washington.



**George F. Habach** has been elected vice president in charge of engineering by Worthington Corp., and **John E. Lancaster** has been named manager of engineering in the corporation's air conditioning and refrigeration division. Habach replaces Harry A. Feldbush who continues



G. F. Habach

as consultant on special engineering problems after having been with the corporation for over 40 years. Lancaster has served in the research and development department in various capacities since he joined the corporation in 1940. **F. A. MacConnell**, formerly assistant chief engineer of the heavy-machinery section, will assume Lancaster's former duties as chief engineer of the section.

**BUY FROM YOUR  
REFRIGERATION WHOLESALER**

**William M. Robertson**, formerly Rochester sales representative of Wolverine Tube Div., Calumet & Hecla, Inc., has been appointed company sales representative in New York. He replaces **William Bothwell** who has assumed new responsibilities in the aluminum department of the company. Also named was **Don F. Zimmerman**, who has recently been appointed to the firm's advertising department. He has been associated with the company for the past 11 years.



**Only PA<sup>®</sup> 400  
gives you all the required qualities**

- HIGHEST CAPACITY ● PHYSICAL ADSORPTION NOT CHEMICAL ACTION
- DRIES REFRIGERANTS TO BELOW 2PPM AT 120°F. ● ADSORBS ACIDS ● NON-DUSTING
- MINIMUM PRESSURE DROP ● NON-DELIQUESCENT ● NO CHANNELING

Progress Through Chemistry

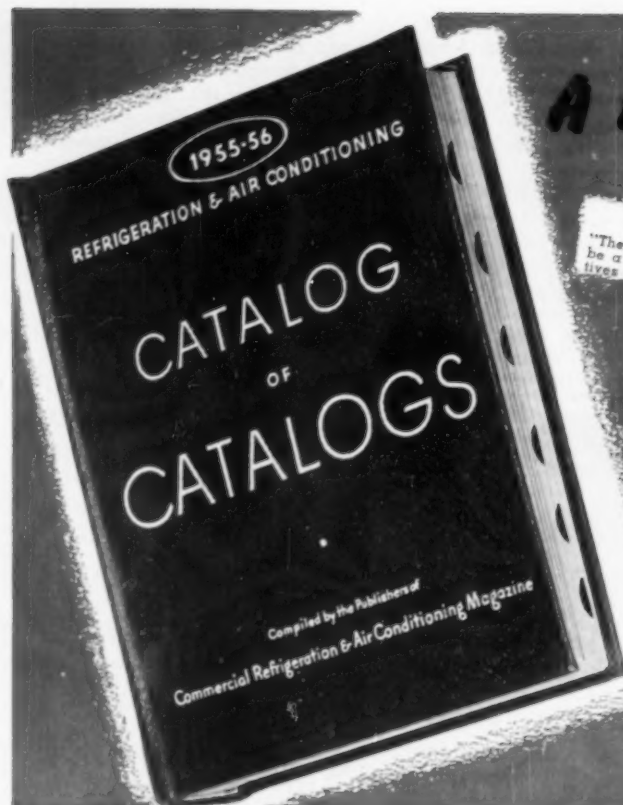
**DAVISON CHEMICAL COMPANY**

DIVISION OF W. R. GRACE & CO.

Baltimore 3, Maryland

Producers of: Catalysts, Inorganic Acids, Superphosphates, Triple Superphosphates, Phosphate Rock, Silica Gels and Silicofluorides. Sole Producers of DAVCO<sup>®</sup> Granulated Fertilizers.

Circle No. 13 on Reader Service Card



**A HIT!**

"... congratulations ... on a splendid job well done ..."

"... we find that it has taken a giant first step in providing the type of information that users of commercial refrigeration and air conditioning equipment need most."

"The 1955/56 Catalog of Catalogs will be a valuable asset to the representatives of our company ..."

"... a well organized reference ... just what we need ..."

### THIS IMPORTANT REFERENCE CATALOG

— the first volume of its kind — bound in a durable hard cover — has had immediate acceptance by the industry. This single volume combines all the product specifications and data of commercial refrigeration and air conditioning equipment, both packaged and remotely installed, as well as all the components of such units and systems. Manufacturers present their own catalog and specification sheets in this book.

#### AIR CONDITIONING EQUIPMENT SECTION

Bound-in manufacturers' catalogs or specifications sheets, with working technical data and source listings. The feature of this section is the comparative specification listings of 1955 lines of room, store, and residential air conditioners. These are presented in the same manner as that of previous years, which has been so successful, and used by so many thousands of men in this field.

#### COMPONENT SECTION

General engineering, contracting, and architectural working data, including comprehensive listings of components and accessories. Information to aid in the application of equipment in refrigerated or air conditioned areas. Bound-in manufacturers' catalogs and specifications sheets.

#### CASE AND FIXTURE SECTION

Refrigerated case manufacturers' catalogs and specifications sheets answering problems in the application of packaged and remotely installed cases and coolers for merchandising or storage of all types of food and beverage products. Blueprints of practical store plans for typical food market layouts. Listings of manufacturers of this equipment.

#### "WHERE TO BUY LOCALLY" — Wholesaler Section

Listing by geographical area, the independent local outlets for refrigeration and air conditioning equipment and supplies. Printed on yellow stock and carefully collated to aid in establishing local purchasing sources.

Collated by the Publishers of

## Commercial Refrigeration & Air Conditioning

1240 ONTARIO STREET  
CLEVELAND 13, OHIO

Refrigeration & Air Conditioning **CATALOG OF CATALOGS**  
1240 Ontario St., Cleveland 13, Ohio

Send me a copy of the 1955-56 CATALOG OF CATALOGS today.

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Name .....

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**ORDER  
Your Copy  
TODAY!**

**\$5.00**

PER VOLUME



It's sanitary  
and odorless

It's immune  
to vermin



It's moisture-  
resistant



## ROCK CORK...your best insulation value for all refrigeration applications

FOR ALL refrigeration applications . . . for service temperatures from minus 300 F to plus 150 F . . . Rock Cork Insulation really blocks heat flow. Rock Cork has proved its value with many records of over 40 years trouble-free service.

When you specify Rock Cork you get the effective insulating properties of mineral wool, plus the superior moisture resistance of asphalt. What's more, Rock Cork can't deteriorate because it is basically mineral in composition . . . it will not support mold growths or micro-organisms that cause decay.

Rock Cork is produced in sheets, lagging and pipe insulation, in standard sizes and thicknesses. Rock Cork Pipe Insulation has the extra protection of asphalt-saturated asbestos felt jacketing which speeds

installation by reducing the need for seam-filling longitudinal joints.

### Skilled application always pays!

For best results, insulation should be applied by experts. Be sure of getting the most from your insulation investment by calling your Johns-Manville insulation contractor. For further information, write to Johns-Manville, Box 60, New York 16, N. Y. In Canada, write 199 Bay St., Toronto 1, Ontario.

### Folder gives all the facts—

Write for your free copy of Folder IN-122A. It contains useful property tables and other important data on Rock Cork Refrigeration Insulation.



# Johns-Manville **ROCK CORK**

## REFRIGERATION INSULATION

Here is *why* the SPORLAN *Catch-All*

is the  
**PERFECT**  
FILTER-DRIER!



the famous Catch-All Molded Porous Core ***catches-all*** the moisture, corrosive acids, sludge and foreign matter that can possibly harm a refrigeration or air conditioning system.

Being molded of minute particles of a highly efficient desiccant, then double activated and moisture proof sealed after assembly, the Catch-All core dries the refrigerant down to an end point so low that any remaining moisture is absolutely harmless. Harmful corrosive acids are also adsorbed and retained. It cannot powder or pack, and the refrigerant cannot by-pass or

channel around it. Even foreign matter as minute as nine microns is filtered out with negligible pressure drop.

That's why engineers everywhere say...if you want perfectly clean, perfectly dry, acid free refrigeration and air conditioning systems, buy Sporlan Catch-Alls, the perfect Filter-Drier!



Ask your wholesaler for the Sporlan Bulletin 40-10 today! You'll find Catch-Alls available in progressive sizes from 3 to 192 cubic inches in flare or sweat connections.

**SPORLAN VALVE COMPANY**

7525 SUSSEX AVENUE

ST. LOUIS 17, MISSOURI

EXPORT DEPARTMENT, 89 BROAD STREET

NEW YORK 4, NEW YORK

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DECEMBER, 1955 • COMMERCIAL REFRIGERATION



# A NEW CONCEPT IN INDIVIDUAL ROOM AIR CONDITIONING!



**BEAUTIFUL—Inside**



**FLUSH—Outside**



All living rooms and bedrooms in the 230 apartments of New York City's smart new Randall House, designed by Boak & Raad architects, feature Airtemp "All-in-Wall" Air Conditioners built right in.

## Airtemp installs new "All-in-Wall" units in 420 rooms in new Randall house

**AIRTEMP BUILDS AIR CONDITIONING TO FIT ANY REQUIREMENT!** Now, for those buildings where a central air conditioning installation does not meet all of your needs . . . Airtemp has developed "All-in-Wall" air conditioning . . . A new concept in individual room cooling. Look at these exclusive "all-in-wall" features:

**Quiet!** Airtemp engineered for super-quiet operation—no distracting motor noise—inside or out.

**Individual Room Control!** Each unit can be controlled by the tenant. Automatic thermostat is standard equipment.

**Flush Outside!** No outside projection to mar the beauty of the building.

**Full Window View!** Unit is out-of-the-way under the window . . . extends only inches into the room.

**Full Capacity!** Extra-high cooling capacity is engineered by Airtemp to meet the demands of the hottest weather.

**Easy Installation!** Eliminates expensive on-the-spot engineering costs in new or old buildings.

**Easy Maintenance!** Inside access plus identical cabinet size for  $\frac{1}{2}$ ,  $\frac{3}{4}$  and 1 H.P. models.

**Individual Metering!** Each tenant absorbs the cost.

All these services are yours when you air condition with Airtemp . . . The top engineers of Airtemp Construction Corporation—local Airtemp servicemen—plus on the spot personnel equipped to guarantee efficient operation through all the years ahead. Write Airtemp Construction Corporation, Dayton 1, Ohio, for further details.



**AIR CONDITIONING FOR HOMES • BUSINESS • INDUSTRY**

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**Small shelf—Big stock...**

## WITH LEHIGH'S GREATER INTERCHANGEABLE PARTS

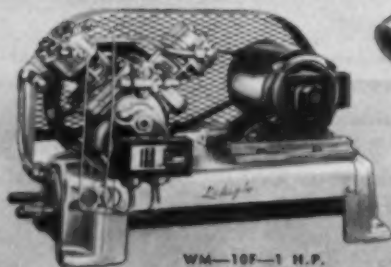
Or, to put it another way, a \$25 investment allows a Lehigh BLU-COLD wholesaler to carry Seals, Valve Plates and Gaskets for the entire BLU-COLD line from 1/4 H.P. thru 5 H.P. You must agree that this is not only a reflection of good engineering but a many sided advantage. Investment is smaller. Inventory is smaller. Less space is required. Turnover is more rapid (and percentage of profit!) Unit servicing is much easier and convenient.

Everybody wins!

### THREE BASIC COMPRESSORS MAKE OVER 200 MODELS

with capacities from 870 to 70,000 BTU/Hr.  
with over 50 generally interchangeable parts

A postcard will bring latest PARTS CATALOG  
or see your nearest Lehigh BLU-COLD  
wholesaler.



WM-10F-1 H.P.  
Water Cooled Unit

Export Dept. — 13 E. 40th St., New York 16, N. Y.

## Lehigh BLU-COLD CONDENSING UNITS and SYSTEMS

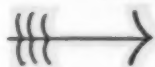
Lehigh Manufacturing Co., Lancaster, Pa.

Division of Lehigh Foundries, Inc.

Manufacturers of Malleable and Grey Iron Castings • Refrigerating Equipment • Air Valves • Automatic Vending Machines



## Selling takes time— **Time** makes selling easy!

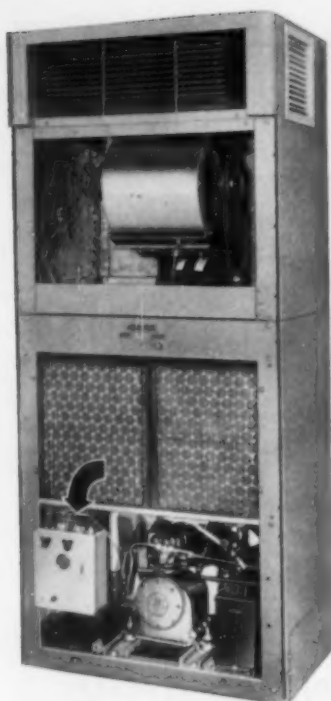


TO CLINCH more sales in less time, quote a *monthly payment*, not a *total cash price*. Many of your prospects need their working capital and usual lines of credit for current operations. No matter how much they need your equipment, they probably won't sign your order *now* unless you show them a convenient, practical way to pay. That's the COMMERCIAL CREDIT PLAN way. When can we tell you our story? Phone our office in your city or write: COMMERCIAL CREDIT CORP., 14 Light Street, Baltimore 2, Md.

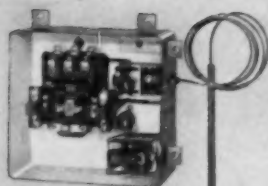


### COMMERCIAL CREDIT CORPORATION

A service offered through subsidiaries of Commercial Credit Company, Baltimore...  
Capital and Surplus over \$180,000,000  
...offices in principal cities of the United States and Canada.



Interior view of the Melco packaged air conditioner showing Allen-Bradley control.



A-B Special Control Panel

Allen-Bradley air-conditioning controls cover a line of temperature and pressure switches for all operating requirements.



Bulletin 837 temperature control



Bulletin 849 automatic timer. Adjustable  $\frac{1}{8}$  sec. to 3 min.



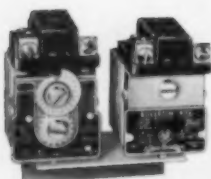
Bulletin 836 pressure switch—available in various forms



Exterior view of the Melco air conditioner made by Melchior, Armstrong, Dessau Co.

# QUALITY CONTROLS

## for Air Conditioning and Refrigeration



Bulletin 836 high and low pressure cutout. Range—30 in. vacuum to 700 psi.



Bulletin 709 Form 3 solenoid starter with HAND-OFF-AUTOMATIC selector.

Allen-Bradley automatic controls are so popular for air-conditioning and refrigeration service because—

- 1—Allen-Bradley solenoid starters have only ONE MOVING PART—there are no pins, pivots, levers, or bearings to corrode and stick. Hence, these starters are trouble free.
- 2—The double break, silver alloy contacts need no maintenance attention. This time and money-saving feature is a "plus value." Just install them . . . and forget them.
- 3—The thermal overload relays remain accurate and dependable, even after years of service.

Standardize on Allen-Bradley controls . . . you and your servicemen will be money ahead.

Allen-Bradley Co., 1340 S. Second St., Milwaukee 4, Wis.  
In Canada—Allen-Bradley Canada Ltd., Galt, Ont.



# ALLEN-BRADLEY SOLENOID MOTOR CONTROL

QUALITY



# BIG JOBS

... LITTLE JOBS

*"Reely" Roll*



One of the finest ways to end the year with a profit is to get full value from every working minute. That's exactly what you do when you use Wolverine's new flat roll of tube that rolls.

In the first place Wolverine's round carton reduces tube handling time. It can be rolled—like a hoop—from truck to job-site or wherever needed. Carrying is easy—all you do is slip it over your arm or shoulder.

Reversed printing and approved color coding tell you exactly what the contents are. Zip-quick gum-tape opening lets you get at the contents quickly.

You'll save plenty of time when you use this carton as a reel. All you do is connect the tubing at one end, roll the carton back. Out comes the tube easily, quickly and free from awkward kinks. The unused tube remains in the

carton—protected against damage and dirt—ready for the next job.

There's still another way in which this carton speeds up every job. It's the contents—top quality Wolverine copper tube—clean, bright, consistent in temper, always easy to bend—in the shop or on the job.

See for yourself how Wolverine's flat roll of tube that rolls can help you do more every day. Ask for Wolverine's "roll of tube that rolls". And remember, always **BUY FROM YOUR WHOLESALER.**

Wolverine Tube, 1405 Central Ave., Detroit 9, Mich.



**WOLVERINE TUBE**

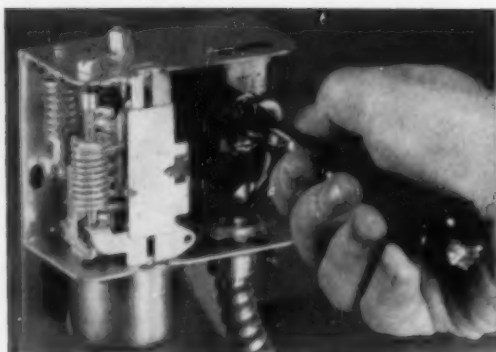
Division of Calumet & Hecla, Inc.

MANUFACTURERS OF QUALITY CONTROLLED TUBING AND EXTRUDED ALUMINUM SHAPES

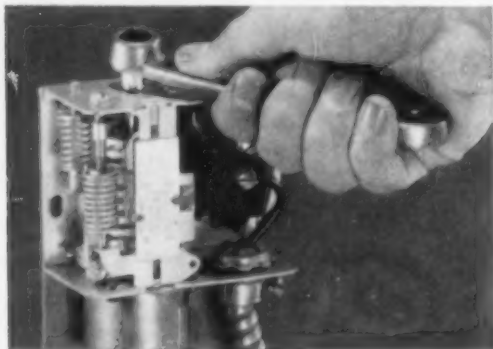
PLANTS IN DETROIT, MICHIGAN, AND DECATUR, ALABAMA • SALES OFFICES IN PRINCIPAL CITIES.

EXPORT DEPT., 13 E. 40TH ST., NEW YORK 16, N.Y.

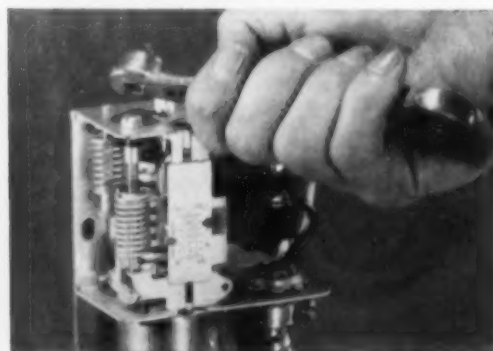
Circle No. 20 on Reader Service Card



1. Mount control (bracket furnished), connect capillary, remove control cover and make 2 electrical connections (terminals are completely accessible).



2. Turn range screw to raise or lower cut-in setting as required (differential does not change).



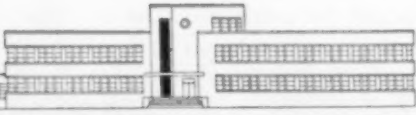
3. Turn differential screw to raise or lower cut-out setting independently of cut-in setting (this widens or narrows differential).

NOTE: Range and differential screws are slotted for screw driver . . . square for standard service wrench where space is tight.

# SAVE TIME, MONEY WITH PENN SINGLE-POLE REFRIGERATION CONTROL

◀ See how easy it is  
to install and set  
the Series 270

So easy to install . . . so easy to set! The Penn Series 270 Single-Pole Refrigeration Control features a simplicity of design that means a big saving of valuable "on the job" time. Mounting and connecting the control is easy, fast. Setting it is even faster. Penn's direct-reading, calibrated scale indicates cut-in and cut-out settings . . . eliminates time-consuming addition and subtraction. What's more, the Series 270 offers outstanding performance at an attractively low cost. Ask your wholesaler about the Penn Series 270 Refrigeration Control. You'll be glad you did. **Penn Controls, Inc., Goshen, Ind.**

**PENN**   
**AUTOMATIC CONTROLS**

FOR HEATING, REFRIGERATION, AIR CONDITIONING, GAS APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

# BANU'S

## TRENDS · OPINIONS · REPORTS

**FOOD RETAILERS PAY** for air conditioning whether or not they install it in their stores! That's the thought-provoking subject of an article in the September issue of *NARGUS Bulletin*, official publication of the National Association of Retail Grocers. The article points out that decrease of sales volume and increased spoilage of perishable foods during hot months are direct business losses resulting from lack of air conditioning. Retailers are encouraged to improve insulation and roofing aspects of their stores and to investigate cost of installing air conditioning facilities, bearing in mind that losses incurred through spoiled merchandise, help inefficiency and fan operation may actually exceed the cost of an air conditioner.

**FURTHER TESTIMONY** to the advantage of installing air conditioning in business offices was revealed by a survey taken during Chicago's most recent heat wave. Among typists, errors increased 1,000% from an average of 11 per hour to more than 95 per hour as temperatures increased from 78 to 96 degrees. Statistics also showed that during an 11-day heat wave, a group of draftsmen produced only 564 work units in 282 man hours. After the heat wave broke, in the same length of time and for the same kind of work, 807 work units were produced in 220 hours. The reason behind these figures, according to medical men, is that as temperature and humidity increase, heart rate also increases, causing fatigue and lowered output.

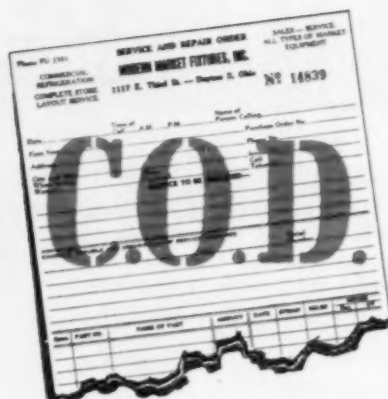
**AN EXPERIMENT** in selling frozen baked goods direct to the consumer is being carried on by Kroger Co. at one of its St. Louis stores. In the pilot store, 24 feet of display space is devoted to frozen cakes, puff pastes, and all types of sweet goods, with storage space provided by a walk-in cooler. The operation is at attempt to learn which items will sell best and the company expects to expand the program to include five St. Louis stores in the near future.

**MORE THAN A MILLION** central residential air conditioning units will be required annually by 1965 according to J. H. Gauss, manager of marketing for General Electric Co. This means that sales will increase nearly 1000% within the next 10 years. By 1965, he predicts, homes built without central air conditioning, or at least some provision for its installation in the future, will probably be the exception. Gauss further speculated that much of the increase will be in 2 and 3-ton units for five and six room houses. He also stressed that this will hardly affect the already booming room cooler market, which is slated to continue its phenomenal sales nearly indefinitely.

**ROBOT UNITS** that will provide increased comfort, convenience and safety in homes were introduced by Dr. Finn J. Larsen, research director for Minneapolis-Honeywell at a recent meeting on the evolution of the automatic home. Shown were a new electronic temperature control system, an automatic home fire alarm system, and a new tap-action light switch, said to represent the first major design change since switches became standard household items. As a hint of things to come, Larsen displayed an experimental thermostat that operates like a miniature radio station and transmits radio signals to tiny, strategically located receiving antennas instead of sending electrical signals through wires as do conventional thermostats.

**TREND TOWARD LOWER COSTS** in residential air conditioning is typified by the recent announcement by Mitchell Mfg. Co. of its development of an air-conditioning unit "powerful enough to cool a three-bedroom residence" to sell at a price of about \$450. The unit, according to Robert H. Lodge, sales manager of Mitchell's packaged air conditioning division, will be air-cooled, and adaptable to both new and existing homes. Lodge says that his company expects to have the unit on the market sometime during 1956.

# Put Your Service on a **C.O.D.** Basis



Tired of trying to collect past-due service bills? This dealer was, so he took the drastic step of converting his entire service operation from credit to cash. He found it made good business sense.

**I** just got tired of arguing with customers about service charges, and struggling to collect past-due service accounts." That's the surprisingly frank and matter-of-fact way in which Donald D. Denny, president of Modern Market Fixtures, Inc., Dayton, Ohio, describes the reasons underlying his company's switch from conventional invoicing procedures to a straight C.O.D. basis in its service operations.

"Like many other commercial refrigeration dealers," Denny explains, "we had become increasingly aware of the problems involved in collecting service accounts. Take, for example, a typical instance of a call on which the serviceman had spent three hours repairing the equipment of a good customer. He figures out the charges on our regular service invoice and then at the end of the day turns this invoice over to the office for billing purposes.

"Often, because of the press of other matters, we fall two or three weeks behind in our service bill-

ings. In that case, we're off to a bad start already, because the customer figures (and not without some justification) that we're in no particular hurry for our money. So maybe it's 30 to 60 days after the call was made before the customer pulls the bill out of a desk drawer in order to pay it.

"He looks at the bill and sees three hours of labor time charged on the call. Immediately he reaches for the telephone to protest. Why, he distinctly remembers that our man wasn't there anywhere near that long! (How many details like that do you distinctly remember after a lapse of a couple of months?) Or maybe he wasn't even around when the service call was made, so he asks one of his clerks how long that refrigeration serviceman was there on his last call. Now the clerk's memory isn't any better than that of his boss, and besides he doesn't want to say anything to make the boss unhappy, so chances are he'll venture the opinion that it wasn't more than an hour at most.

"Result? Rather than lose a good customer, we make an adjustment on the invoice which results in our losing two hours of labor charges out of a three-hour call.

"Here's another typical example of what happens. If by chance the customer has another service call before he pays the previous bill, he immediately becomes indignant, even though the second call may have no relation whatever to the original one. As a consequence, we frequently are faced with necessity of voiding the first bill if we want to keep the customer happy.

"Admittedly," Denny confesses, "some of this difficulty stemmed from our own failure to rigidly enforce our prescribed methods of handling service records and accounting. Servicemen, like anyone else, are inclined to follow the path of least resistance, and often our men would not even bother to have the job tickets signed by the customer, and never would collect for a call unless the customer took the initiative. Even then, the



men would sometimes refuse the money because they didn't want to be bothered with it, and would simply tell the customer to sign the slip instead.

"We made this transition to C.O.D. service about two years ago," Denny declares, "and we wouldn't go back to a credit basis for anything. The results of the change have been all to the good. This is not surprising when you consider the fact that psychologically the best time to collect service charges is immediately after the job is completed, while the customer still feels pleased that his equipment is back in good running order again.

"Our C.O.D. service program has not only enabled us to substantially reduce our accounts receivable, but also to cut down the number of costly adjustments in service bills. We had the new program running smoothly within four or five months after its inception. As a matter of fact, our customers seemed to accept this cash-on-the-barrelhead approach almost immediately, once the reasons for it had been explained to them. Our

biggest difficulty was in policing our own service organization to ensure the program being properly carried out.

"Did we receive any complaints from customers when we started collecting on-the-spot for service calls? A few, naturally. One of the commonest was that there might not be anybody present when the call was completed to authorize payment of the bill. We answered this very simply by pointing out to the customer that he had to have somebody on hand who was authorized to pay his suppliers, such as the bread man or the milk man, when deliveries were made, and that this same person could be authorized to pay the service bill.

"Believe me," Denny avers, "we have had far fewer complaints than I ever anticipated, and if we ever actually lost a single customer as a result of this C.O.D. program, I never knew about it!"

For the benefit of other dealers who might be interested in following Denny's lead, here is an outline of the mechanics of the C.O.D. service program established by Modern Market Fixtures:

**Pre-testing the idea.** Denny personally discussed the proposed plan somewhat informally with a number of representative customers in an effort to feel out their reactions. Virtually all of them agreed that the idea of C.O.D. service made good sense.

**Announcing the change.** A plain typed postcard was sent out to all service customers, politely but firmly informing them that *effective immediately* all service work would be handled on a strictly cash basis. The only exceptions were a few "preferred accounts" such as small chains and established "good pay" customers who found it easier for their own internal reasons to process service invoices in the previous way.

**Supervising the program.** The service manager was given the direct responsibility for policing the entire program. He was given a list of the preferred accounts so that he, in turn, could inform the individual servicemen in advance of any calls which were not to be handled on the new C.O.D. basis. All warranty calls were similarly indicated.

He was instructed to see to it that each service order carried the name of the person who called for the service, on the assumption that if he had the authority to request the service he also had the authority to pay for it.

He was given the authority to okay, through a telephone call from the customer, the invoicing of any service job for which the bill was unusually large. In such cases, however, he was instructed to insist on obtaining a definite commitment on a payment date before granting the credit approval.

He was held responsible for notifying known "problem accounts", at the time of their service requests, that payment would have to be in cash.

**Instructing the servicemen.** An initial meeting of the entire service department was called at which the new C.O.D. program was explained in detail. Subse-

*Continued on page 43*

#### IMPORTANT NOTICE

##### To Our Customers:

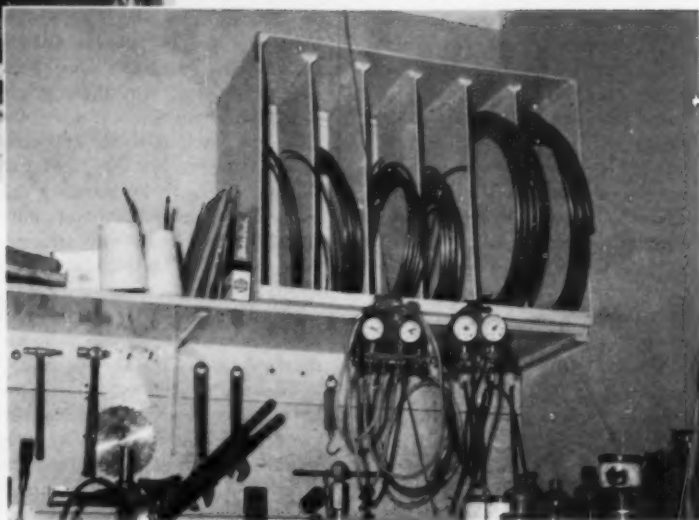
In order to reduce our cost of invoicing and bookkeeping, please be advised that effective immediately ALL SERVICE WORK will be handled on a STRICTLY CASH BASIS. Please authorize someone in your store to pay service man if you are out.

Modern Market Fixtures  
1117 E. Third St.  
Dayton, Ohio

**ADVANCE NOTICE** of the change from credit to cash service was provided all customers by this firm but tactful postcard notice.



Behind this unimposing store front lies a spotlessly clean and meticulously kept service shop which the owner uses as a valuable promotional tool to effectively prove that . . .



## *Your Service Shop Can Sell*

**S**EEMINGLY casual shop tours, but with plenty of planning behind them, are proving an unusual and highly effective means of new equipment sales promotion for Refrigeration Equipment Co., Greeley, Colo. commercial refrigeration dealer.

Greeley, a city of 25,000, centers the rich agricultural areas of north east Colorado, with a trading area population in excess of 65,000. Included are more than a dozen small towns, all of which Mike Holland, a veteran refrigeration engineer who has operated the firm since 1940, considers his market.

"Sales competition on self-service display cases, dairy boxes, walk-in coolers, and special purpose refrigeration is just as intense in the small town as in large cities," Holland points out. "When we first went into the field and began exploiting every possible market, we found that to make ourselves outstanding we would have to develop some unusual factor which would count heavily with customers."

In making sales calls, Holland noted one fact—the usual refrigeration firm did all of its business on the customer's premises, and except for an occasional visit to the showroom, the customer had little contact with the service and maintenance end.

"When a couple of my prospects evidenced some interest in the repair methods we used, I knew that I had hit upon an angle which could add a little luster to our firm name," Holland grinned, "by making an issue of the neatness and efficiency of the shop, inviting prospective customers to visit and making certain that they appreciated what they saw."

Since 1941, the Refrigeration Equipment Co. shop at 723 Main St. in Greeley has been a "show place" for customers interested in any aspect of commercial refrigeration. Holland has divided his 25' by 75' building neatly into three sections, each of which is kept as clean and eye-appealing as many long hours of work can insure.

First is the showroom, divided into neat rows with new equipment on the left, reconditioned trade-ins on the right. A single desk, comfortable lounges for customers, and photographs around the walls complete the simple decor.

Second section, the tool and parts room, opens both into the showroom and to the shop at the rear. Here, Holland has stressed neatness in a department which is all-too-often a haphazard mass of tools and parts.

*Continued on page 83*



## He knows why it pays to use ANACONDA

Anaconda Tubes, Fittings, Vibration Eliminators are engineered and built to work together for quick installations, for quality jobs that bring in new business... Anaconda's full line means easy one-stop shopping, too!

### See your Anaconda Distributor

The American Brass Company, Waterbury 20, Conn.  
In Canada, Anaconda American Brass Ltd.,  
New Toronto, Ontario.

# ANACONDA®

REFRIGERATION PRODUCTS

Circle No. 22 on Reader Service Card

Some phases of refrigeration installation and maintenance work  
can be hazardous, so the smart serviceman will . . .

# PLAY IT **SAFE!**

**R**EFRIGERATION service and installation men, in the routine performance of their duties, daily come into contact with a variety of hazardous materials. Some of these materials are toxic, while others are highly combustible. Primary sources of danger in this field are refrigerants, solvents used in painting and for parts cleaning, and insulating materials.

There is, however, a safe method of handling each of these potentially harmful materials, it is pointed out by the New York State Department of Labor's division of industrial hygiene. This safe method is the one which all servicemen should follow.

Probably the greatest source of danger lies in any one of the following refrigerants: ammonia, sulphur dioxide, methyl chloride, or propane. The first three are toxic while the last is flammable. Other refrigerants such as Freon, Carrene, Dielene are not as hazardous but still contain an element of danger. Carbon dioxide, brine, and water are safe with ordinary handling. Any of these may be encountered in field or shop.

Handling any refrigerant in the field calls for care. A refrigerating

system containing ammonia gas, sulphur dioxide, or methyl chloride which is leaking or which is to be approached only when one is protected by a Bureau of Mines approved, well cared for, gas mask. Time should be taken to provide maximum ventilation by opening as many windows as possible.

## **Choose Mask Carefully**

The gas mask recommended for this work has a full face, and a separate hose-connected canister. The canister may be specifically designed for one type of gas, in which case it is identified by its color and lettering, such as: ammonia gas—green; acid gases, sulphur dioxide—white; organic vapors, methyl chloride—black. Or, it may be a group-type canister usable for any of the refrigerants listed above. The group canister is brown.

The group canister should contain a timing mechanism and should be discarded after one complete revolution of the timer. Since canisters normally have a sealed shelf life of four years and an unsealed shelf life of one year,

a record of the date of purchase and opening should be made directly on the canister. The canister should be discarded when the shelf life has expired.

A gas mask of this type will not protect against all concentrations of toxic gases. For protection against extremely high concentrations an air line respirator should be used.

A leaky machine should never be carried from the field to the shop. It should be emptied before removal. If the refrigerant is to be saved it may be pumped into a sealed container. If the refrigerant is not saved it should be flushed safely. The refrigerant should be passed through an absorption tower before it is discharged. The discharge should be to the outdoors and at a place when re-entry into a habitable area is not likely.

An absorption tower is simply constructed from a 1½ to 2' length of black iron pipe 2 to 3" in diameter. Both ends are fitted with removable galvanized screen stops and pipe caps or reducing nipples. The pipe caps should be drilled and tapped so they can accept a hose connection nipple. The re-



ducing nipples should terminate in a hose connection. All the steel pieces should be painted with asphaltum paint before assembling.

In assembling, the bottom screen is inserted and the pipe cap is fastened on. The body of the tower is filled with an absorbing material, and then the top screen and cap are fixed in place. Lengths of rubber hose connect the unit being emptied to the tower and the tower with the outdoors. The absorbing material used depends upon the refrigerant being absorbed: for ammonia, dry sodium bisulfate is recommended; for sulphur dioxide, soda lime; and for methyl chloride, activated charcoal.

### **Guard Against Explosion**

Propane is a highly combustible material. It explodes readily. It is used as a fuel as well as a refrigerant. Extreme care in the prevention of sparks should be taken. Non-sparking tools should be used. Non-sparking shoes should be worn.

Beryllium bronze tools, or tools tipped with this metal are suitable. In the absence of a safety tool, however, a thick rag in the mouth of a steel wrench may be effective in preventing sparks. Steel hammers should not be carried into the area. Use a plastic hammer if you need one. Shoes should have stitched soles and heels. The heel should not be nailed with steel nails. The use of open electric motors, sockets and switches should be avoided. A "No Smoking" sign should be set up and obeyed.

### **Flush Units Thoroughly**

Freon, Dielene, Carrene and aqueous ammonia systems (gas refrigeration) are not as dangerous as ammonia gas, sulphur dioxide, or methyl chloride. They may be approached with lesser caution. A gas mask is not normally required. However, if the system is leaking badly an air-supplied respirator should be used. If the refrigerant is to be discarded in the field, the precautions noted above with high hazard refrigerants should be taken.

Since a leaking unit is not carried into the shop, precautions for handling leaking units need not be taken. Aqueous ammonia units are flushed with a rapid stream of water. They should be opened and flushed in an exhausted booth with a pipe connected to an exhaust fan in the rear or the top. Since water is used, a drain should be provided in the floor of the booth. The exhaust fan discharges to the outdoors. A control volume of 100 cfm of air per square foot of open area is required. A spray booth type fan with cast blades is usually adequate.

All other units may be directly connected to a pump with copper tubing before the valves are opened. The pump should be connected to a pipe line through which the refrigerant is conveyed to its discharge point. All systems, whether of the booth type or the pump type, should discharge at a point 6' above the roof where re-entry is not likely.

Refrigerator units, motors, and boxes are normally cleaned before reinstalling, or during the repair operations. Usually a solvent-soaked rag is used for cleaning. Sometimes this solvent is carbon tetrachloride.

Carbon tetrachloride is a very toxic material, and concentrations in excess of 25 parts per million

parts of air are to be avoided. For example, 1/3 oz. of carbon tetrachloride vapors completely evaporated in a room 10 x 20 x 10' in size can produce a hazardous concentration of the vapor.

### **Select Safe Solvents**

It is safer to use a solvent with a much lower toxicity. There are several solvents which can be substituted for carbon tetrachloride. Stoddard solvent, a high flash naphtha, is probably the best substitute available. Its toxic limit is 500 ppm, and it is relatively difficult to ignite. Methylene chloride, perchlorethylene, trichlorethylene, or methyl chloroform may be used. These solvents are sold commercially under a multitude of trade names, either alone or as mixtures.

Regardless of the solvent used for cleaning, care should be taken to provide plenty of ventilation. If in the field, open as many windows as is possible. If in the shop, use the solvent only in an exhaust-equipped booth. Do not use a solvent of any type in confined, unventilated, quarters.

In any shop where parts are dip or vapor cleaned, care should be taken either to mechanically ventilate the tank when using heated

*Continued on page 42*

## **LOOK OUT for these danger spots!**

- Handling many types of refrigerants either in the field or in the shop.
- Cleaning complete units or component parts with various solvents.
- Painting or refinishing any unitary equipment or components.
- Installing or replacing certain types of insulating materials.

This authoritative article details the steps which should be taken to protect personnel against these potential occupational hazards.

● Use of proper practices in bending and joining refrigerant tubing can cut installation and service costs, and result in more satisfactory jobs. Here are some practical pointers on how any serviceman can achieve . . .

## Greater Efficiency with Copper Tube

by Arthur I. Heim

Research Engineer  
Copper & Brass Research Assoc.



**FIG. 1 (top)** — Approved method of bending copper tube when no tools are available starts with the workman laying the tube on a level surface and placing his knee at the spot where the bend is to begin. Section of tube beyond knee is then pulled up slowly. **FIG. 2** — Rounding the bend without wrinkling the inner wall is accomplished by shifting the knee gradually toward the center of the radius as the tubing is drawn up to a 90-degree bend.

**G**OOD workmanship in bending and joining copper tube, now used almost universally for piping in air conditioning and refrigeration systems, is one of the most important factors in the efficient, trouble-free operation of such systems.

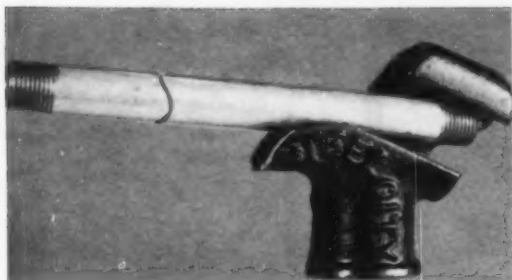
Installers, too, will benefit if proper bending and joining methods are employed. Frequent call-backs for repairs will be avoided; customer satisfaction will be increased. Or, put another way, overhead will be reduced while the long-term reputation of the contractor is enhanced.

It may be well to review briefly just what happens to a pipe or tube when it is bent. In general, the outside wall of the bend is stretched, and consequently thinned; the inner wall is compressed and thickened. The cross-section within the bend tends to become flattened.

In a properly made bend in copper or brass tube, work hardening of the metal tends to offset the decrease in strength that might be expected from thinning of the outer wall. This factor of weakening therefore imposes no significant restriction on the bendability of copper or brass tube.

The degree of cross-section flattening is, however, a limiting factor in the bending of any kind of pipe or tube, because flattening reduces the bore and creates turbulence which results in a pressure drop.

Here again, copper offers the greatest latitude for making relatively perfect bends. Strong yet highly ductile, copper tube may be readily bent even to small radii without undue flattening. For example, a 1" copper tube of .0508" wall thickness can be bent to a  $2\frac{1}{2}$ " radius with cross-section flattening of not more than 5% — a value which is entirely satisfactory for all ordinary work.  $\frac{1}{2}$ " to  $\frac{3}{4}$ " copper tube of .0508" wall can be bent to twice its diameter without excessive flattening or loss of strength.



**FIG. 3**—One type of hand bender in which the operator obtains various radii by changing the position of the pipe at the flange.

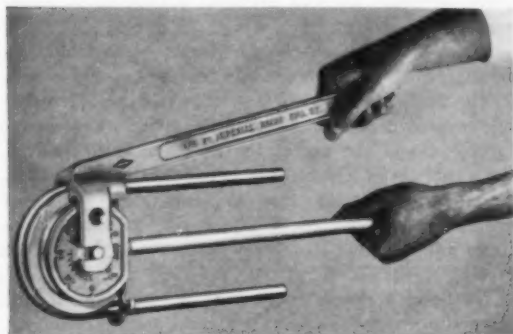
The inherent softness of copper, one of its major advantages, makes it the ideal material for bending. Conversely, for straight lengths the metal can be obtained in a hardened condition. Thus the characteristics of copper tube can be controlled to suit the particular needs of the installation.

This combination of strength and ductility, the ease with which it can be worked on the job, and its many other advantages account for the overwhelming preference throughout the industry for piping systems of copper tube.

Although bending tools or machines offer the best assurance of a perfect bend, the easy workability of copper makes hand bending of smaller diameter tubes entirely feasible. No special skill is required, but the basic considerations outlined above should be kept in mind.

Flattening of the tube and wrinkling of the inner radius are twin bending difficulties that can be eliminated if a few simple precautions are taken. The importance of these factors should not be underrated because either of them will disturb the flow and cause a pressure drop. It is easy to see that the cumulative effect of several poorly made bends in a system can seriously impair its efficiency.

It is recommended that a hand bend be started by grasping the tube in both hands with the thumbs ex-



**FIG. 4**—Built-in shoes are employed to vary radii of bends made possible by this "2-in-1" type of portable hand tube bender.

tending toward each other along what will be the inner radius. As pressure is exerted and the tube takes on an appreciable bend, the thumbs are brought closer to each other. In this manner the radius of the bend can be controlled with reasonable accuracy.

A bending spring affords a simple but effective way to minimize the danger of flattening. This tightly wound steel spring is slipped over the section that is to be bent where, in conjunction with the thumbs, it acts as a die to prevent deforming of the tube cross-section.

On the job bending of larger tube size, say of the order of 1", can also be done without tools by using the knee as the forming die.

The straight tube is laid on the floor and the knee placed on it at the spot where the bend is to begin—not where its center will be. With the knee and one hand holding the tube to the floor, the bend is made by slowly pulling up the section beyond the knee with



**FIG. 5**—Scale markings indicate the degree of bend on this bench type tube bending tool, or elbow former, designed for shop use.

the other hand (Fig. 1). To round the bend without wrinkling the inner wall, the knee is shifted gradually toward the center of the radius as the tube is drawn up (Fig. 2).

By working carefully and shifting the knee into the bend as it develops, a perfectly serviceable 90° bend can often be made in less time than it takes to go to a toolbox for a tube bender.

It should be emphasized that although bending by hand will produce a satisfactory result for most installations, it is impossible to achieve by this method the nearly-perfect bends made by a mechanical pipe and tube bender. Indeed, for making bends of very small radius, or where tubes of large diameter are involved, the use of bending tools or machines is essential.

These range from the simple and readily portable devices shown in Fig. 3 and 4 to the bench bending machine, or elbow former, in Fig. 5. Of course, far more complicated power-driven benders are made for high speed production bending, but these are more likely to be found in the manufacturer's plant than in the installation and service departments of dealers and contractors.

For some jobs it may be occasionally necessary to bend tube of fairly large diameter to irregular radii or in more than one plane. Because most refrigeration tubing is supplied "dead soft", this normally presents

*Continued on page 77*

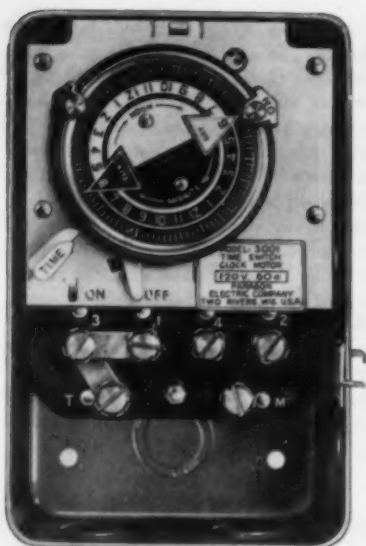


FIG. 1—Basic time switch is simplest type of time control.

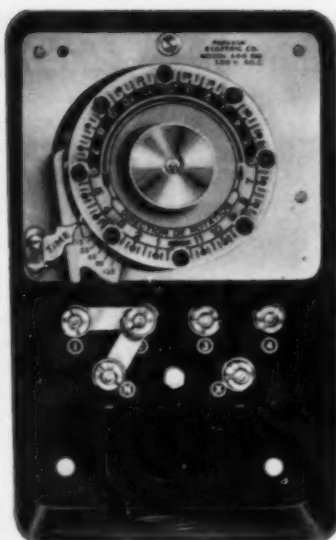


FIG. 2—Control designed for commercial defrost applications.



FIG. 5—Dual dial control for water spray defrost systems.

# TIME CONTROLS

*Their applications  
in the refrigeration  
and air conditioning field*

## PART 1

by Tom Morrison

Manager, Refrigeration Div.  
Paragon Electric Co.

ALL refrigerated fixtures must be defrosted at intervals. This elimination of frost from heat transfer surfaces may be accomplished in many ways. They vary from the defrosting of a farm or home freezer type, which is accomplished merely by scraping off the frost, to the highly specialized hot gas and reverse cycle patented defrost systems.

When the surrounding air is above the melting point of ice, defrosting is comparatively easy. It is only necessary to turn off the compressor and allow the surrounding air to melt the ice and frost. However, when the surrounding air is below the melting point of ice, the ice will not melt during an OFF cycle, so some form of artificial defrosting is necessary.

Some of the more popular forms of artificial defrosting are: water, brine, electric heat and hot gas.

The use of time controls to insure positive defrosting is standard recommended practice with most manufacturers, and the use of the time switch has solved the problem of converting to automatic defrosting. This has brought up other problems. These problems are how many defrosts per day, or the frequency of defrost, and also the length or duration of the defrost cycle.

Too long a defrost period on a time control will leave the fixture without refrigeration after the ice melts; too short or too infrequent defrost periods will allow frost to build up gradually and reduce refrigeration capacity.



The simplest and most elementary method of defrosting is the warm air or shut-down method. Up until quite recently this was accomplished through a manual shut-down of the compressor by the operator, who waited until the evaporator had defrosted and then restarted the compressor. This has been, for the most part, eliminated by the use of a basic type of time switch. This type of control is illustrated in Fig. 1 and is the simplest type of all time switches.

The time switch revolves once every 24 hours, and by setting the OFF tripper at the time when defrosting is to start and the ON tripper when the defrost period is at an end, it is possible to eliminate the operator, who formerly did this function by hand. If additional cycles are required in a 24-hour period, it will only be necessary to add an additional set of trippers. It is also possible to hand-trip this type of switch in the event this becomes necessary.

This type of control has proved satisfactory when the defrost period was in excess of  $1\frac{1}{2}$  to 2 hours and no more than four defrost cycles were required in a 24-hour period. However, with other types of defrosting, such as hot gas, electric heat, water spray, etc., it is necessary to have a switch to operate more defrost cycles with shorter defrost periods.

### Controls Designed for Special Use

The first control designed expressly for commercial defrost applications is illustrated in Fig. 2. This is an MB type of construction, or a momentary contact switch. In this type of control, a defrost period for as short as 15 minutes to a maximum of 120 minutes is possible. The number of defrost cycles vary from one to eight every 24 hours. In the photograph shown (Fig. 2) there are eight pins in the defrost dial, which would give eight complete cycles every 24 hours, or one cycle every three hours. In this type of unit one pin is all that is necessary to complete the cycle. The

pin picks up the cam segment and holds it in the switch position for that time determined by the cam segment which varies from 15 minutes to 120 minutes. Such a control has been standard for controls of hot gas or reverse cycle of electric heat defrosting.

There are numerous refrigeration systems in existence which do not have any means of defrosting. These systems can be readily converted to hot gas defrosting with the addition of a hot gas line teed into the evaporator ahead of the thermostatic expansion valve, a hot gas solenoid valve and a time switch. It is also necessary to provide a drain for the defrost water. Such an installation is in Fig. 3.

### Two Types of Defrost Systems

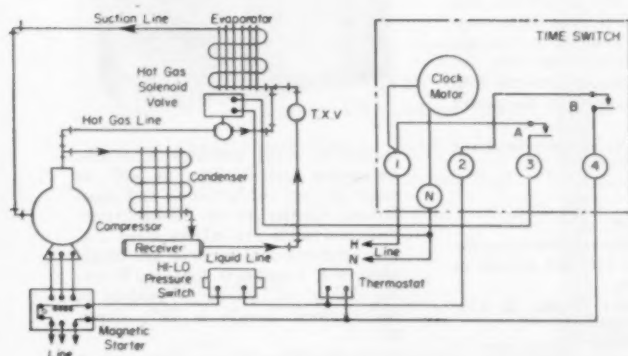
During the defrost cycle contact A opens the hot gas solenoid valve; contact B shorts out the solenoid thermostat, thus insuring the compressor running during the entire defrost cycle. This last contact is very necessary as it is entirely possible that when the time clock calls for a defrost cycle, the compressor thermostat maybe in the open position and there will be no source of hot gas until this thermostat closes.

In some cases a time control may only run on compressor time. That is, it is only in the line during the time the motor starter or the compressor is running. In these cases it will not be necessary to short out the compressor thermostat. The time clock will, therefore, not run 100% of the time and will operate on compressor time rather than real time.

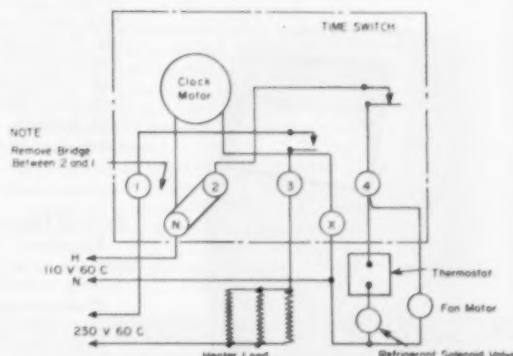
A similar, type of control using this same type of dial with a different set of switch contacts may be used to control an electric heat system. In Fig. 4, we have a single pole double pole switch arrangement. Through one contact we control the compressor or the compressor motor starter and through the other contact the heater.

*Continued on page 86*

## ... Wiring Diagrams for Hot Gas and Electric Heat Defrosting



**FIG. 3 — HOT GAS DEFOST** wiring diagram shows hot gas line teed into the evaporator ahead of the thermostatic expansion valve, and both a hot gas solenoid valve and a time switch added to the system.



**FIG. 4 — ELECTRIC HEAT DEFOST** wiring diagram shows a single pole double pole switch arrangement in which one contact controls the compressor or compressor motor starter and the other contact controls the heater.

# NEW PRODUCTS

For further information on any of these products, simply circle on the postcard provided in this issue the key numbers of the items in which you are interested. Your request will be forwarded directly to the companies concerned.

(For Air Conditioning Products turn to page 62)

## Unit Cooler

**Product:** Model "TJ" half-round unit cooler with quick servicing feature.

**Manufacturer:** Tenney Engineering, Inc., Union, N.J.

**Features:** Removal of a single



screw exposes entire unit for servicing; eliminates need to remove permanent lines. Units are equipped with oil-less type motor and fan, louvered grille for controlled airflow, and patented "Facitized" fin coil sections. Unit measures 6 $\frac{3}{4}$ " high and is useful for small walk-in coolers, under counter boxes, back of bar and beverage coolers.

Circle No. 71 on Reader Service Card

## Ice Bin Door

**Product:** Patented "Roll-away" door for ice storage bins.



**Manufacturer:** Roy Follett Corp., Garden City, N.Y.

**Features:** Design and construction of door permits top-mounted

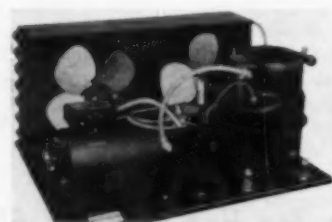
icemaker to discharge ice into bin without interference while door is open. Guarantees 100% access opening and eliminates sharp-edged tracks and danger of lost or damaged doors. Operates with fingertip control and is constructed of interlocking plastic slats that ride on molded, hard-rubber tracks. Door is now standard equipment on Follett ice bins. Replacement kits are available for Follett bin model no's. 24, 36, and 50 already in service.

Circle No. 72 on Reader Service Card

## Condensing Units

**Product:** Improved line of nine twin-cylinder hermetic condensing units.

**Manufacturer:** Servel, Inc., Evansville, Ind.



**Features:** Compact steel-case models include five air-cooled and four water-cooled electric units ranging in capacity from  $\frac{3}{4}$  to 1 $\frac{1}{2}$  hp. Improvements include six new design and performance features that have been incorporated in the power unit designs.

Circle No. 73 on Reader Service Card

## Sound Detector

**Product:** Improved listening device for detecting internal defects in moving machinery.

**Manufacturer:** Burke & Co., Worton, Md.

**Features:** Device allows user to accurately locate broken, loose, worn or bent parts in engines, motors, pumps, compressors and similar equipment and is useful in determining efficiency of steam traps and locating air or liquid leaks in underground piping. It utilizes dual

detectors to transmit sounds to one or both ears and makes it possible to listen to two different points at the same time. Each detector contains pick-up diaphragm and ampli-



fying diaphragm to provide maximum sound vibrations. A pair of extension rods are furnished for reaching into remote places and an interchangeable bell stethoscope is also supplied to detect pressure or vacuum leaks. All metal parts are made of stainless steel and hose and ear plugs are of soft, live rubber.

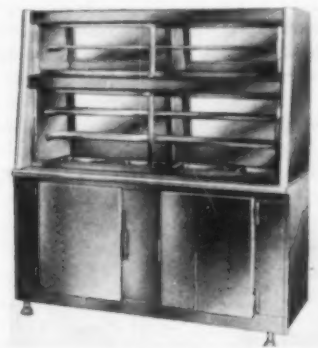
Circle No. 74 on Reader Service Card

## Salad Cooler

**Product:** "Automatic-Dorclosing" salad cooler.

**Manufacturer:** Dunhill Soda Fountain Corp., Brooklyn.

**Features:** Sliding glass doors in lower display section close auto-



matically. Unit provides automatic defrosting and lighting as well as top-to-bottom refrigeration and insulation. Cooler is of all-steel construction with stainless steel display fixtures and models are available in 4, 5 and 6 ft. lengths. Working height of all three models is 36"; overall height is 72"; depth 24".

Circle No. 75 on Reader Service Card

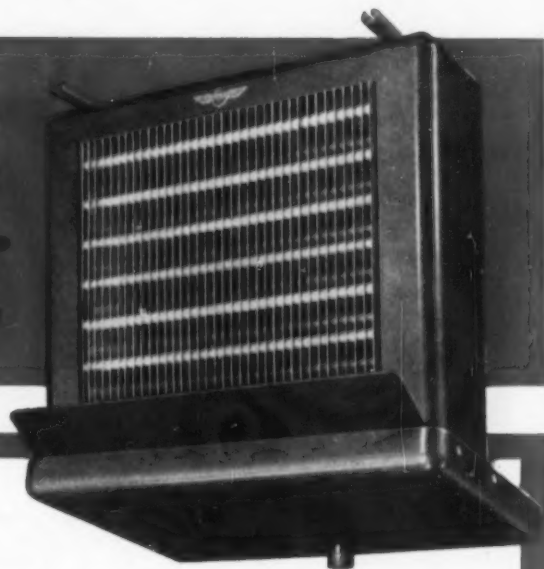
## Protective Coating

**Product:** "Spray-Mastic" protective coating for insulation.

**Manufacturer:** Eagle-Picher

# EXCLUSIVE-PATENTED\* HOT GAS DEFROSTER

## LARKIN FROST-O-TROL



Hailed since 1948 as the most efficient automatic hot gas defroster ever devised, the patented Larkin Frost-o-Trol has a specially designed, factory-installed metering orifice which controls the amount of hot gas entering the evaporator, prevents any slug back, and assures rapid defrosting.

Frost-o-Trol is used only in Larkin low temperature Humi-Temps, the low side unit that takes the toughest cooling jobs in stride—from minus 32°F. sharp freeze rooms to 30°F. meat storage rooms.

Check the price, check the installation cost, check the features with your wholesaler. He will explain why dealers from coast to coast have sold thousands of Larkin Humi-Temps with exclusive, patented Frost-o-Trol Automatic Hot Gas Defroster.

\*U.S. Patent 2,688,850

### Features That Sell and Satisfy

Compare these outstanding features of the Larkin Low Temperature Humi-Temp Unit with Frost-o-Trol Automatic Hot Gas Defroster. Every one is a sales help to you and every one builds customer satisfaction which results in repeat sales!

- Minimum temperature rise during defrosting
- Adjustable defrosting time
- No excess heat or moisture load
- Lower operating costs
- Higher efficiency of evaporator unit
- Heat applied throughout entire evaporator
- Melts frost from inside out
- Simple, low-cost installation
- Drip pan is electrically heated by a carbon impregnated, water-proof, molded rubber pad—assures positive drainage of melting ice and water—prevents freezing and spill-over
- Larkin patented Cross Fin coil—staggered tubing
- Heavy gauge die stamped aluminum case
- Self-locking nuts—vibration-proof assembly
- Rubber mounted motors with thermal overload protection
- Universal motor mounting to fit any NEMA motor



## LARKIN COILS, INC.

519 MEMORIAL DRIVE, S.E., ATLANTA, GA., — MU. 8-3171

Co., Cincinnati, Ohio.

**Features:** Product is asphaltic compound of a special chemical dispersion type that is easily sprayed with any conventional roofer's or undercoater's spraying equipment. Is virtually unaffected by temperature variations between 40 and 140 F. Does not break down or separate at below-zero temperatures, is chemical resistant, fast drying, and remains pliable indefinitely.

Circle No. 76 on Reader Service Card

### Ice Storage Cabinet

**Product:** Model 925 ice storage bin for use with most automatic ice making machines.

**Manufacturer:** W. Mannhardt & Son, Chicago, Ill.

**Features:** Available with openings to accommodate one or more ice makers for either bin top mount-



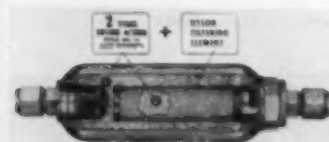
ing or individual stand mounting of machine, with chute into bin furnished. Has capacity of 925 lbs. of ice and provides two shovel doors for removing large quantities of ice and top front sliding doors for smaller ice requirements. Interior is of heavy gauge No. 2B stainless steel with rust resistant galvanized steel optional. Exterior front, ends and top are of stainless steel with back and bottom of aluminum. All hammered aluminum exterior also available. Unit measures 6' long, 2' 6" wide and 4' high plus legs. Other sizes available from 250 to 4,000 lbs. capacity.

Circle No. 77 on Reader Service Card

### Filter-Drier

**Product:** "Golden Torpedo" filter-drier with two-stage drying action.

**Manufacturer:** Imperial Brass Mfg. Co., Chicago, Ill.



**Features:** Compact unit is provided with two desiccant chambers within the shell, and a new "Impernyl" filter made of nylon. Device is

of copper and brass construction with end fittings silver brazed to shell, and is supplied charged with PA-400 high capacity Silica Gel. Unit is available in eight capacities up to 100 cu. in. of drier, with filtering area proportionate to capacity.

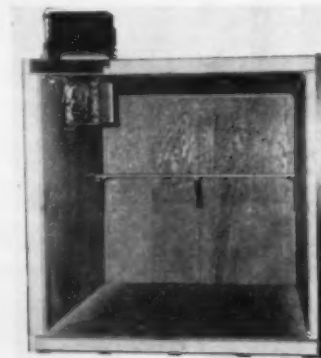
Circle No. 78 on Reader Service Card

### Walk-In Cooler

**Product:** Large capacity "Thrifty-Cooler" which utilizes a compact 1/2 hp compressor.

**Manufacturer:** Sherer-Gillett Co., Marshall, Mich.

**Features:** Low-cost unit has



capacity of 68 beverage cases or 25 ten-gallon cans. Occupies 46.6 sq. ft. of floor space, and stands 6'-6" high. Copeland compressor assembly and condenser add 14" to overall height. Entire condensing unit can be mounted anywhere on top of the cooler. Finished in blue-grey tone, the cooler is shipped in prefabricated sections, ready for assembly. Compact compressor operates on 115 volt, single-phase, 60 cycle current.

Circle No. 79 on Reader Service Card

### Panel Cutting Saw

**Product:** "Panel Master" portable electric saw for heavy duty cut-



ting and trimming.

**Manufacturer:** Kett Tool Co.,

Cincinnati, Ohio.

**Features:** Has 2" diameter saw blade giving full 3/4" depth of cut and is equipped with a heavy duty, 110 volt ac/dc, 5/16" capacity motor. Easily cuts sheets and panels of fiberglass, plywood, plastic, metal or plastic laminates, mild steel up to 16 gauge, and aluminum up to 3/16". Has gun-sight guide and adjustable shoe for accurate straight-line, contour, and depth controlled cutting. Four assorted blades and necessary adjustment wrenches are also provided.

Circle No. 80 on Reader Service Card

### Dry Cooler

**Product:** Model C15 dry cooler with 570 half-pint milk bottles capacity.

**Manufacturer:** Bevco Co. Inc., St. Louis, Mo.

**Features:** Unit has no coils or motors inside cooling compartment. Entire interior is unobstructed for capacity storage and easy cleaning. Has noiseless 1/4 hp sealed refrigeration unit, baked enamel exterior, stainless steel sliding lids, fiberglass and temlock insulation, and adjustable temperature control. Provides 9 cu. ft. of storage area in its 19" deep food storage compartment and requires only 28" x 48" of floor space. Grill dividers for separating various sizes and types of containers are optional accessories. Cooler is especially adaptable for use by schools cooperating with Federal School Milk Program.

Circle No. 81 on Reader Service Card

### Storage Cabinet

**Product:** Model S-25 upright cabinet for large capacity back room



storage of bulk and package ice cream.

**Manufacturer:** Schaefer, Inc., Minneapolis, Minn.

**Features:** Unit is of all-steel construction with Fiberglas insulation and occupies floor space of only 34 x 36". Four interior compartments provide capacity for 1323 pint





"Now looka here podnah, when I said I wanted  
White-Rodgers Controls in my house, I meant it, see!"

Your customers may not be as violent . . . but they're just as particular about their new homes. They can be mighty bothersome if everything isn't perfect.

After all, when they have the best of everything else in their homes they naturally want the best in controls too . . . and that always means White-Rodgers.

We'll be glad to send you a complete catalog that includes specifications.



# WHITE-RODGERS *Controls*

FOR HEATING • REFRIGERATION • AIR CONDITIONING

ST. LOUIS 6, MO.  
TORONTO 8, ONTARIO

packages of ice cream or 324 half-gallon packages. Uniform minimum temperature of -5 F is maintained through use of refrigerated sides and compartment shelves. Air tight door has heavy-duty hinges and 60-lb. pressure latch with built-in key lock. Cabinet is finished in baked white enamel.

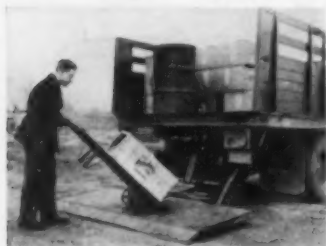
Circle No. 82 on Reader Service Card

### Tailgate Loader

**Product:** "Convento-Wood" hydraulic tailgate loader for trucks.

**Manufacturer:** Convento Mfg. Co., Cambridge City, Ind.

**Features:** Capacities of 2000



and 4000 lbs. are available for this device which serves as truck's tailgate as well as loader. Assembly is mounted beneath truck floor and fits all 1½-ton and larger trucks, requiring no cutting or altering of cross members or undercarriage. Unit is lever operated and includes several unusual safety features.

Circle No. 83 on Reader Service Card

### Fractional Motor

**Product:** Model SP-A shaded-pole fractional-hp motor for replacement use.



**Manufacturer:** Morrill Motors, Fort Wayne, Ind.

**Features:** Versatile unit is available in ratings from 1/500 to 1/80 hp, at speeds from 1200 to 1550 rpm. Five low cost mounting brackets are

available for adapting motor to most replacement duties. Unit is equipped with large oil reservoir, spiral groove viscosity lubrication pump, single iron casting for support of all major parts, and standard fan silencer. Unit is designed to operate in ambient temperature ranges from 32 to 120 F and can be supplied for 60 cycle operation at 115 or 230 volts.

Circle No. 84 on Reader Service Card

### Milk Shake Machine

**Product:** Model 211 "Shake-maker" back bar milk shake machine.

**Manufacturer:** Sweden Freezer Corp., Seattle, Wash.

**Features:** Compact unit is self-contained, has six gallon tank, and features new "Air-O-Metric" mix feed system which needs no adjustment. Produces four 12-oz. shakes



a minute. Refrigeration is furnished by ¾-hp hermetically sealed, water cooled condensing unit. Machine is finished in stainless steel and baked white enamel.

Circle No. 85 on Reader Service Card

### Drink Dispenser

**Product:** "Coldpoint" drink dispenser, with self-contained carbonator and compressor.



**Manufacturer:** Bastian-Blessing Co., Chicago.

**Features:** Four patented "Mini-max" draft arms, in which syrup or concentrate and plain or carbonated

water are mixed automatically at the nozzle, assure uniform drinks. Two of the draft arms have twin levers for drawing plain and carbonated water. Each of the four pressurized syrup tanks holds three gallons of syrup and an illuminated revolving "Roto-sign", with color transparencies featuring three of the beverages dispensed, is mounted on top of unit. Dispenser is claimed to eliminate need of individual dispensing units for four cold beverages and is mechanically refrigerated up to draft arm nozzles. Stand occupies 36" x 25" of floor space.

Circle No. 86 on Reader Service Card

### Water Chillers

**Product:** Refrigerated water chillers for industrial uses.

**Manufacturer:** Vic Mfg. Co., Minneapolis.



**Features:** Recommended for a variety of industrial processes, these chillers are available in several capacities based on need. Air-cooled refrigeration system used. Company says unique design of units assures full efficiency even in room temperatures of up to 115 F.

Circle No. 87 on Reader Service Card

### Nail Driver

**Product:** "Safe-T-Matic" nail driver for driving masonry nails into



concrete and metal.

**Manufacturer:** Safety Nail Driver Corp., Clifton, N.J.

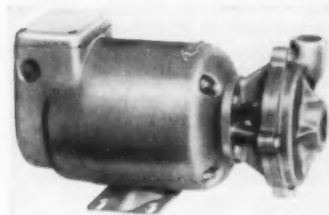
**Features:** Tool has built-in permanent magnet for holding nails in correct position, and a sliding safety shield to eliminate the danger of flying nails. Nails driven with the tool have strong holding power and do not require use of star drills, plugs or screws. Product takes masonry nails of  $\frac{1}{2}$ " to  $1\frac{1}{8}$ " length.

Circle No. 88 on Reader Service Card

#### Centrifugal Pump

**Product:** Model D-500 centrifugal pump for use in closed, semi-closed or open systems.

**Manufacturer:** Ruthman Ma-



chinery Co., Cincinnati, Ohio.

**Features:** Small size pump is equipped with 1/20-hp motor and self-adjusting pre-tested seal. May be mounted in horizontal, vertical, or angular position, without restriction to the high level line of liquid in the reservoir. Discharge relation is in-

terchangeable in four 90-degree positions. Unit is compact and simply constructed, and is available in either cast iron or bronze.

Circle No. 89 on Reader Service Card

#### All Purpose Trucks

**Product:** Line of all-purpose medium duty trucks.



**Manufacturer:** Wilder Mfg. Co. Inc., Port Jervis, N.Y.

**Features:** Trucks are made in 16 different styles which include platform, bin, table, shelf, and box trucks. Each of the 16 styles is available in four different sizes.

Circle No. 90 on Reader Service Card

**BUY FROM YOUR  
REFRIGERATION WHOLESALER**

#### Time Switches

**Product:** Standardized line of single-pole time switches.

**Manufacturer:** Tork Clock Co., Inc., Mount Vernon, N.Y.

**Features:** Four single-pole models make up the No. 1191 line of switches. All units are designed to



control any light or power circuit in both high and low voltage, and can switch a 3500-watt lighting load or a  $\frac{1}{2}$  to 1-hp motor load. Suitable for a variety of lighting and control applications. Each unit can be supplied with either plain, skip-a-day, astronomical, or seven day dial. Switches have all-brass gear train driven by Telechron motor and are enclosed in NEMA type 1 steel case,  $8\frac{1}{4}$ " high, 5" wide, and  $4\frac{1}{4}$ " deep.

Circle No. 91 on Reader Service Card

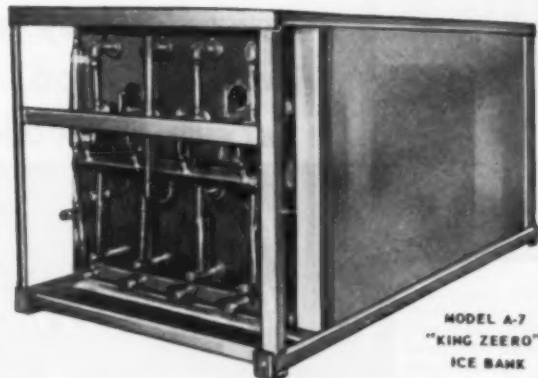
#### RECOLD ADDS TO PLANT

Plans for a 22,000 sq.-ft. addition to the plant of Refrigeration Engineering, Inc., Los Angeles, have been announced by Hy Jarvis, president.

## Announcing "King Zeero's" NEW SERIES OF ICE BANKS for More Efficient, Economical Air Conditioning

The "King Zeero" ICE BANK is designed for air cooling in Churches, Mortuaries, Theatres, Offices, Stores, Auditoriums, Factories, Clubs, Restaurants, etc. Ice Banks may be added to existing systems for increased capacity.

The "King Zeero" ICE BANK is designed to deliver 32° to 34° F. sweet water for recirculation through secondary equipment. Design temperatures may be obtained with mixing valves.



MODEL A-7  
"KING ZEERO"  
ICE BANK

CAPACITIES - 500 lbs. to 30,000 lbs. (72,000 B.T.U.'s to 4,320,000 B.T.U.'s) in a single unit. Multiple units may be installed.

**THE KING ZEERO COMPANY**  
4302 W. Montrose Ave., Chicago 41, Ill.

#### CONSIDER THESE ADVANTAGES--

- DIRECTED COURSE OF WATER travels with "built-in" agitation.
- NO MECHANICAL AGITATION REQUIRED.
- LARGE WATER COMPARTMENTS spaced on 11" and 12" centers.
- 33% EXTRA ICE CAPACITY safely attained with up to 300 G.P.W. water flow.
- ICE IS "BURNED OFF" PLATE COILS progressively, exposing prime and secondary surface for maximum flash cooling capacity.
- ICE THICKNESS automatically controlled eliminates "freeze ups."
- 94 SIZES to fit space requirements. Other designs for special applications.
- OUR ENGINEERING SERVICE and plant facilities are at your disposal.

#### MAIL COUPON TODAY

King Zeero Co., 4302 W. Montrose Ave., Chicago 41, Ill.

☐ Please send me your new ICE BANK Catalog.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

Circle No. 25 on Reader Service Card

## SUPERIOR VALVE OPENS EAST COAST WAREHOUSE

New warehousing facilities have been established at 405 S. Washington Ave. in Bergenfield, N. J. by Superior Valve & Fittings Co.

The new facility marks Superior's entry into the warehousing field on the east coast, and is designed to provide better service to customers in metropolitan New York and the surrounding states. It supplants the company's New York City office and will serve as both Eastern District headquarters and warehouse.

Manager of the Eastern District office will continue to be F. Neil Robson; warehouse manager is Bernard N. Hynes.

## CANADIAN INDUSTRY SHOW IS FEB. 1-3

The Second Canadian Refrigeration & Air Conditioning Show will be held in the Coliseum, Toronto, on Feb. 1-3, 1956. The event is sponsored by the Canadian Refrigeration Manufacturers Association.

## PLAY IT SAFE . . .

*Continued from page 31*

solvents, or to use only cold solvents in a well ventilated room.

All solvents can cause dermatitis. The use of impervious gloves is the best preventive of dermatitis of hands. Neoprene rubber makes the best gloves, except when used with solvents for neoprene. Other plastics in the form of gloves are available. If the solvent is splashed, splash guards should be used. The cleaned parts should be drain dried, not wipe dried, in a well ventilated area.

If it is essential to wipe dry the cleaned parts, the cloth used for drying should be disposed of in a covered steel container located outside the building. Rags used for hand cleaning should be disposed in the same manner. They should never be thrown into the nearest garbage pail, waste paper basket, or corner.

Refrigerator units and boxes are sometimes painted. The thin-

ners and solvents in the paints are toxic and flammable.

If the paint is applied with a spray gun, a spray booth should be used. The booth should be constructed in an approved fashion. It should be large enough to accept the largest object to be sprayed. The sprayer should stand outside of the booth and spray into the booth. Control volumes of 100 cfm of air per square foot of face opening are required.

Dip pointed units should be dried in a mechanically ventilated cabinet or booth. Control volumes of 50 cfm of air per square foot of open area are adequate.

The fan blades in both cases must be constructed of non-ferrous metal. Brush painting and drying should be done in well ventilated areas.

Paints and thinners should be stored in metal lockers. Such lockers should be naturally ventilated.

There are many different materials used for insulation. Among them are asbestos, mineral wool,



You can depend on Federal for advanced engineering — and styling — in the kind of food refrigeration you're always proud to show and use . . . Food protection and Profit protection, as well, in both Reach-In and Walk-In Refrigerators and Freezers.

Remember, only FEDERAL can offer

you the benefits of such features as: Trouble-Free Automatic Self-Defrosting, Controlled Air Conditioned Patented "Filter Kold" that avoids odor transfer and contamination — and a tremendously wide range of sizes and capacities in Stainless Steel, Aluminum or All-Steel enameled units.

CHECK FEDERAL FIRST for the Finest in Food Refrigeration.  
Write for Bulletin No. 101 or prices on your specific needs.

## FEDERAL REFRIGERATOR COMPANY

510 ELIZABETH STREET  
WAUKESHA, WISCONSIN

FACTORIES: WAUKESHA AND  
BELLEVILLE, WISCONSIN

Circle No. 26 on Reader Service Card

*Gleaming  
Beauty*  
that  
**Pays Its Way in  
Practical Food  
Service Protection**

# FEDERAL REFRIGERATION





rock wool, glass fiber, kapok, cork, paper, and wood. Any of these materials can be very dusty, especially if they are old and worn.

Asbestos is extremely toxic. It is classified with pure silica in its ability to cause lung pathology. It comes in the form of loose fibers, paper, or board. Kapok is highly explosive. Cork and wood dust are extreme fire hazards. Glass fiber particles in the skin can cause extreme irritation.

When handling insulating materials, handle them gently, avoid stirring up dust. If asbestos is handled, an approved-type dust respirator must be used. When handling kapok or cork the basic fire precautions should be taken. The use of sparking tools should be avoided and smoking prohibited.

#### C.O.D. SERVICE . . .

*Continued from page 27*

quent meetings were scheduled as needed to police the program and iron out any misunderstandings or difficulties which arose.

Each serviceman was given a supply of the announcement cards to carry with him at all times, so that he could present one to any customer who might claim that he'd never been informed of the new policy.

An important part of the entire program was the insistence upon the proper action by the serviceman in totaling the bill upon completion of the job and presenting it to the customer before leaving the premises. Every man was instructed to either collect the bill on the spot or else call the office so as to permit the management to speak directly with the customer. Only the service manager or Denny himself was authorized to make any exceptions to the C.O.D. rule.

Each time that a serviceman returned to the shop he was required to turn in all his completed job tickets, along with the money collected. The tickets were properly recorded and the money placed directly into the cash drawer.

Any serviceman failing to follow the "collect or call" rule was immediately sent back out to make

the collection. This procedure quickly impressed the servicemen as well as the customers that C.O.D. meant just what the letters indicated.

#### SERVEL COMMERCIAL DIV. IN EXPANSION MOVE

Factory offices of the sales, advertising and service sections of Servel's commercial refrigeration division have been consolidated with production management in a

larger area in plant 6 at Evansville, Ind. headquarters.

Management personnel involved in the shift are John R. Morrill, vice president and general manager; John F. Zubrod, product manager; A. G. Wirick, manufacturing manager; O. B. Lance, advertising and sales promotion manager; George S. Eager, service manager; J. W. Downen, assistant service manager; H. C. Preher, chief applications engineer, and R. J. Gerard, Jr., production control manager.

## NEW BONNEY WRENCH



Once again—BONNEY is quick to recognize the refrigeration mechanic's specific needs. The new BONNEY No. 1248 Wrench is designed especially to fit the new Sporlan thermostatic expansion valves (Types P and H). Thin, short handled, with 30° head . . . this 1½" open-end wrench makes it easy to remove the power element from the valve body. Fast service demands the right tool . . . put the new BONNEY No. 1248 in your kit today.

Other BONNEY Sporlan Expansion Valve Wrenches available with 1½", 1¼", 1⅜", and 1⅝" openings. Either short handle, 30° head . . . or long handle, straight head.

BONNEY FORCE & TOOL WORKS • ALLENTOWN, PENNSYLVANIA

Circle No. 27 on Reader Service Card

# GET.... LITTLE GIANT PRODUCTS FOR TROUBLE-FREE SERVICE!



AVAILABLE IN 3 SIZES  
Can be furnished with  
threaded front.

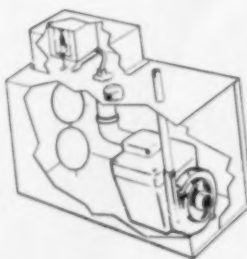
## for EVAPORATIVE COOLERS

Little Giant hermetically sealed - in oil pumps need no lubrication. The three sizes available are just right for 95% of Evaporative Cooling Air Conditioning needs. Dependable in service, they are free from interruption. Little Giants will operate fully submerged.

### OTHER APPLICATIONS:

- Milk cooler circulation.
- Cold drink dispenser circulators.
- Coolant circulation for machine tools.
- Yard fountains and minnow tanks.

## LITTLE GIANT CONDENSATE REMOVER



Ideal for mechanical refrigeration installations; performs a necessary service wherever condensate must be drained. The pump is the dependable Little Giant fully submersible type perfectly controlled by the cycling of a positive action electric switch and float.

- Small and compact . . . quiet operating
- Coated to prevent corrosion
- Completely automatic
- Available in 3 sizes

Write today for catalog sheets, specifications and prices.

# LITTLE GIANT

VAPORIZER CO., INC.  
5101 Classen Blvd.  
Oklahoma City, Okla.

Write for name of your nearby Dealer.

Circle No. 28 on Reader Service Card

## USEFUL

### BULLETINS • BOOKLETS • CATALOGS

**TOXIC EFFECTS** of carbon tetrachloride are described in grim detail in a comprehensive 8-page review published by Chemicals & Materials Corp. Literature points out danger of careless usage of this chemical, describes nature of its toxic effects, and utilizes several case histories to emphasize growing necessity for protective measures when it is used in industrial applications.

Circle No. 101 on Reader Service Card

**TECHNICAL DATA** relating to its complete line of valves, driers, fittings, and accessories is provided in a new 24-page catalog (R-5) of Superior Valve & Fittings Co. Complete specifications, including dimensions, weight, and size of connections are given as well as representative photographs of the various units.

Circle No. 102 on Reader Service Card

**COMPLETE SPECIFICATIONS** for its entire line of air and water cooled compressors and condensing units are contained in two consolidated catalogs (R493 and G124R) of Brunner Mfg. Co. Each catalog is illustrated with representative photographs of units and includes specifications, dimensions, construction and capacity data in tabular form.

Circle No. 103 on Reader Service Card

**VIBRATION MOUNTINGS** are illustrated and complete design and construction details are given in a new 8-page catalog (G-55) issued by Vibration Mountings, Inc. The 2-color brochure outlines features of various types of mountings, provides selection charts and diagrams, and contains photographs of typical installations.

Circle No. 104 on Reader Service Card

**VARIABLE SPEED TRANSMISSIONS** are the subject of an 8-page brochure available from Sterling Electric Motors, Inc. The illustrated, two-color booklet discusses inner workings of the Sterling positive pulley design and features information on drive selection factors. Also included are descriptions of many types of automatic and remote speed control accessories.

Circle No. 105 on Reader Service Card

**ADVANTAGES OF RUBBERIZED BITUMEN** in insulating refrigerating plants is described in detail in an 8-page booklet published by Natural Rubber Bureau. Literature outlines with charts and figures, the results of comparative tests for strength, moisture-vapor transmission rate, weathering, and chemical resistance. Photographs, showing applications, are also included.

Circle No. 106 on Reader Service Card

**A COMPLETE GUIDE** to writing vibration isolation specifications for air conditioning and related equipment has been prepared by a registered professional engineer and is being made available by Kortund Co., Inc. The 4-page bulletin (F2A) contains a definitive treatment of factors involved in the selection of available isolation media and provides a handy selector chart that further simplifies the writer's job.

Circle No. 107 on Reader Service Card

**SPECIAL SOFT SOLDER ALLOYS** is the topic covered in a new bulletin being distributed by Alpha Metals, Inc. Set up in chart form, the publication lists various alloys available and gives brief descriptions, melting points, and some of their suggested uses.

Circle No. 108 on Reader Service Card

**COLD PLATES** and assemblies are topics covered in a new 4-page price list (No. 505) issued by Dean Products, Inc. The bulletin illustrates and describes complete line manufactured by the company and gives full product data including design and construction features, dimensions, capacities, and applications, as well as prices.

Circle No. 109 on Reader Service Card

**AUTOMATIC NAIL DRIVER** is illustrated and described in a new 4-page folder issued by Matrix Engineering Corp. The two-color brochure contains photographs of various applications, provides complete specifications, and gives details of product operation and other characteristics.

Circle No. 110 on Reader Service Card

**PHYSICAL PROPERTIES** of "Foamglas" cellular glass insulation are described and applications recommended in a new 8-page folder offered by Pittsburgh Corning Corp. The two-color booklet gives sizes and shapes available as well as suggested thicknesses required for temperature ranging from -50F to 900 F. Condensed recommended specifications and application photographs provide a handy reference for engineers, applicators and insulation contractors.

Circle No. 111 on Reader Service Card

**HOW TO INSTALL** mineral wool pneumatically is the subject of a new eight-page illustrated manual prepared by National Mineral Wool Assoc. Step-by-step instructions, with photographs and drawings, show methods to follow in insulating attics, roofs, sidewalls, basements, crawl spaces, and other areas.

Circle No. 112 on Reader Service Card

**SOLDERING AND SOLDERING FLUXES** are topics covered in a 2-page informational bulletin issued by Pfanstiehl Laboratories. Suggestions for successful soldering are given, together with recommendations for proper selection of fluxes and proper application of them in various soldering operations.

Circle No. 113 on Reader Service Card

**PORTABLE ELECTRIC TOOLS**, including drills, sanders, grinders, and buffers are illustrated and described in a 24-page, complete-line catalog available from Black & Decker Mfg. Co. The 2-color brochure lists complete product characteristics, performance data, specifications and prices.

Circle No. 114 on Reader Service Card

**NEW LINE** of quick connect-disconnect hose couplings is described and pertinent technical information is given in an illustrated 20-page catalog published by Titeflex, Inc. The 2-color booklet features page-size cut-away views of the coupling as well as application photographs and selection tables and diagrams. Various coupling accessories are also described.

Circle No. 115 on Reader Service Card

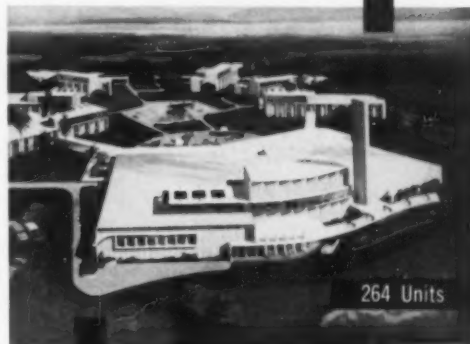
**HIGHLY CONDUCTIVE LUBRICANT** for use with conducting hinge joint switches and high-speed air blast breakers is illustrated and described in a 4-page folder available from Conduco-Lube Co. The illustrated literature gives product features, prices, and application ideas.

Circle No. 116 on Reader Service Card

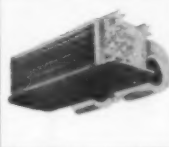
(See page 61 for Air Conditioning Literature)

# New! Really Compact!

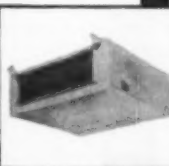
## drayer-hanson SPOTAIRE-LRC Air Conditioning



already set for new Lady Luck Hotel, Ltd. rendering courtesy Architect Ramon Bismarck



LRC Basic Unit



LRC Concealed Cabinet



No individual-room equipment for complete air conditioning of multi-room structures allows such design freedom for the architect... achieves such "pin-drop" quietness of operation!

Eye-opening... new D-H Spotaire LRC's require just 11 1/2" head-room from ceiling; provide your best answer for low-cost, individual room air conditioning. 3-speed controls. For cooling, heating, dehumidifying, filtering. Old or new construction.

There's also a full LRC story — installation — operation — no-maintenance — you should know about...

Request catalog L.P. 5.220

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INCORPORATED

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Circle No. 29 on Reader Service Card

# CONTRACTORS

NEWS • ACTIVITIES • PLANS

## FTC Charges Hood Dairy Company With "Giveaway" of Refrigeration Equipment

One of the country's largest producers of frozen dairy foods, H. P. Hood & Sons, Inc., Charlestown, Mass., has been charged by the Federal Trade Commission with sales methods prejudicial to competing small business concerns.

A commission complaint alleges the firm furnishes equipment, including refrigerated cabinets, and services to retail customers with the effect that those retailers buy and sell Hood products exclusively.

While charging Hood with specific acts injurious to competition, the complaint recognizes that the "comparatively few" larger companies, including Hood, all give special services to retailers to induce them to become "exclusive" customers.

Generally, retailers of frozen dairy products handle only one line, the complaint alleges, and special inducements given them by producers are "in effect" exclusive dealing arrangements regardless of the absence of specific agreements or understandings.

Specifically, the complaint states, Hood has induced retailers to handle only its ice creams and other frozen dairy food by making available to them refrigerated display cabinets, soda fountains, and other equipment, servicing this equipment, repainting the interior of their stores, furnishing them with signs and advertisements, lending them money without interest and giving them various purchase discounts and rebates.

In addition, the complaint states, retailers who own their facilities are given special discounts or rebates not made available to competing retailers who do not own

facilities. The equipment is either sold, leased or loaned to the retailer, and Hood does not receive any direct profit or compensation.

The display cabinets which are leased to the retailer are bought by Hood, because of the purchasing power at its command, at prices no higher and sometimes less than those paid by regular licensed facility dealers and small ice cream manufacturers, the complaint states. This practice, the allegation continues, induces retailers to refrain from buying or leasing facilities from the licensed dealers.

Hood operates mainly in the six New England states with some activity in New York and sells over \$17 million in frozen dairy foods each year. Its overall sales of all dairy products amounts to just under \$111 million.

The company is granted 30 days in which to file answer to the complaint. A hearing is scheduled Dec. 13, at Charlestown, Mass., before an FTC hearing examiner.

On Feb. 15, 1954, the FTC instituted similar proceedings against eight major ice cream manufacturers and 55 of their subsidiaries, described as doing 40% of the nation's ice cream business.

The six major firms are: The Carnation Co., Fairmont Foods Co., Pet Milk Co., Beatrice Foods, Foremost Ice Cream Co., and Arden Farms. Hearings are still being held on these complaints.

### CONTRACTOR LICENSING CODE PASSED IN D.C.

Regulations for the licensing and bonding of refrigeration and air conditioning contractors and master mechanics in the nation's capitol have been adopted by the

*Continued on page 82*

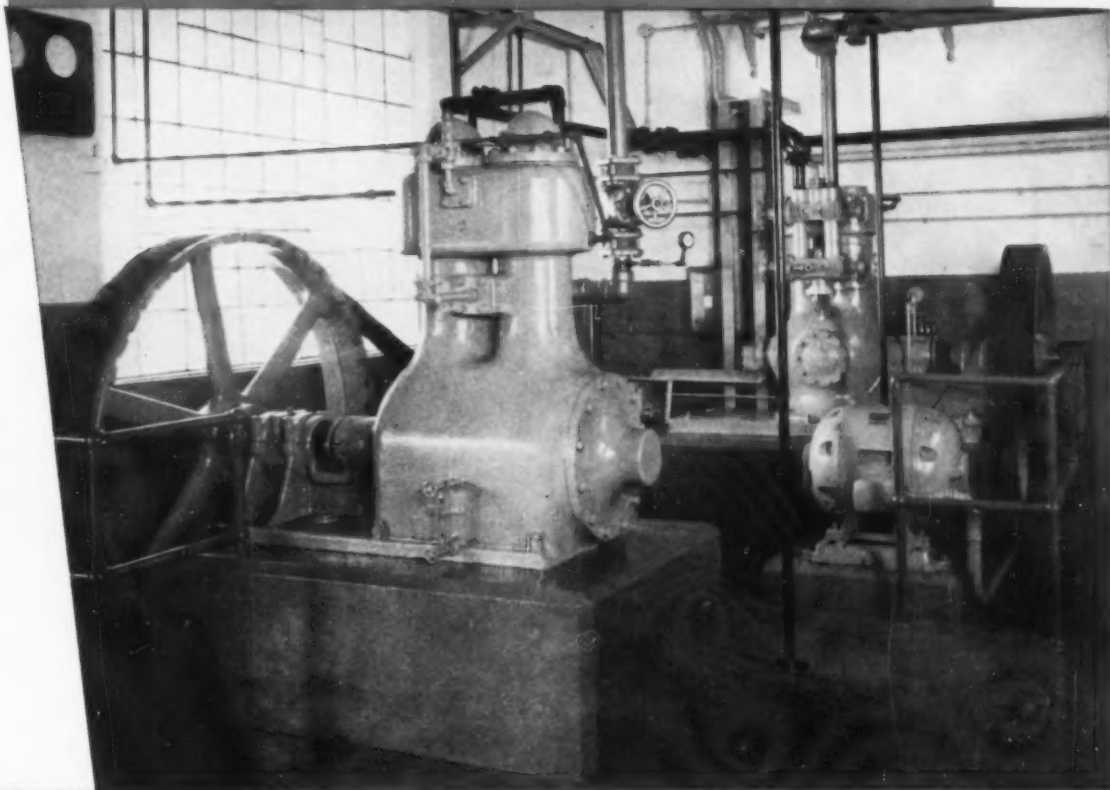
### MISSISSIPPI OFFICIALS WELCOME McQUAY PLANT



**McQUAY'S NEW PLANT** in Grenada, Miss., was formally opened recently in ceremonies attended by both the governor and governor-elect of that state. Shown here beside the cornerstone plaque, which was unveiled at the opening, are (left to right): J. P. Coleman, governor-elect of Mississippi and present attorney general; Roy J. Resch, president of McQuay, Inc.; Gov. Hugh White of Mississippi; and H. Blake Thomas, McQuay executive vice president, who was master of ceremonies at the event. Gov. White was principal speaker at the formal program held inside the plant.



# How to assure dependable refrigeration



**PROFITABLE**, efficient refrigeration depends on effective compressor lubrication. With *Texaco Capella Oil (Waxfree)* in your compressors, systems stay exceptionally clean for smooth, dependable performance. Even at temperatures as low as minus 100 degrees F., *Texaco Capella Oil (Waxfree)* will not precipitate wax in systems.

All *Texaco Capella Oils (Waxfree)* — and there is a complete line of them — exceed the requirements of the Freon floc test as well as the specifications of all leading refrigeration manufacturers.

*Texaco Capella Oils (Waxfree)* are especially

refined to resist oxidation and retain stability. They do not foam, are moisture-free and compatible with all types of refrigerants. Available in refinery-sealed 55-gallon and 5-gallon drums, 1-gallon cans — and the more popular grades in 1-quart containers.

For expert advice in selecting the proper lubricants for your compressors, contact a Texaco Lubrication Engineer. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States or write:

\* \* \*

The Texas Company, 135 East 42nd Street,  
New York 17, N. Y.

VISIT THE TEXACO EXHIBIT AT THE AIR CONDITIONING AND  
REFRIGERATION SHOW, ATLANTIC CITY, BOOTH 101



## **TEXACO Capella Oils (Waxfree)**

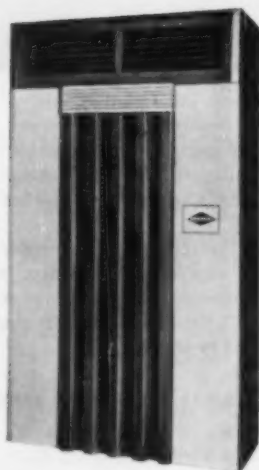
**FOR ALL REFRIGERATING AND AIR CONDITIONING COMPRESSORS**

TUNE IN... TEXACO STAR THEATER starring JIMMY DURANTE on television... Saturday nights, NBC.

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*Can you afford to be without*



## **AIR CONDITIONING?**

Competent market research shows that good, efficient air conditioning can add as much as 20% to 33% to your business during the "hot" months. Air conditioned stores attract more customers who stay longer and spend more money.

Outstanding among new developments in air conditioning is the new UNARCO ROYAL-AIRE packaged air conditioner. The distinctive ROYAL-AIRE (Model CUE shown above) is available in five sizes, and features the exclusive UNARCO "pump-down" control system. This insures instant cooling coil response, longer operating life, and more efficient and economical performance.

The ROYAL-AIRE is readily adaptable to duct distribution systems.

UNARCO builds a full line of air conditioning equipment, including the series AEC (up to 60-ton capacity) with built-in water saver; and the series SC—a self-contained packaged ceiling unit that saves valuable floor space.

Write NOW for free literature describing in detail the many advantages of UNARCO units and how they can work to increase YOUR business.

the



## **ROYAL-AIRE**

**a distinctive packaged AIR CONDITIONER**

Union Asbestos & Rubber Co.  
Heating & Cooling Division—Dept. 106RD  
332 So. Michigan Ave., Chicago 4, Ill.

I am interested in Air Conditioning a

Name \_\_\_\_\_

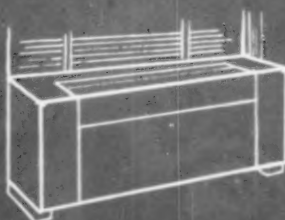
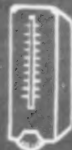
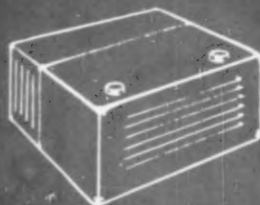
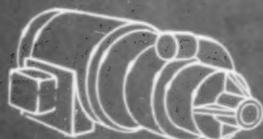
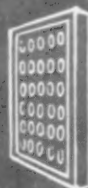
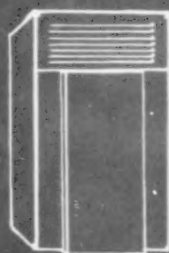
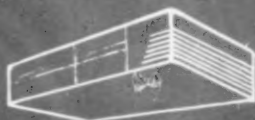
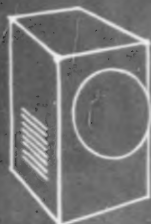
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# Air Conditioning Section

COOLING • HEATING • CIRCULATION AND HUMIDITY CONTROL



RESIDENTIAL



INDUSTRIAL



COMMERCIAL



INSTITUTIONAL

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## *You Are In The Business . . .*

A recent survey made for COMMERCIAL REFRIGERATION AND AIR CONDITIONING magazine established the fact that:

74.3% of the respondents indicated they were "in the air conditioning business".

Of those in the air conditioning business:

86.9% sell Air Conditioning Equipment of some type

78.7% sell Window or Room Air Conditioners

84.6% sell Commercial Packaged Air Conditioners

74.8% sell Central-Plant Air Conditioning Systems

77.4% sell Year-Round Residential Air Conditioners

88.7% service Air Conditioning Equipment

YES !! THE READERS OF COMMERCIAL REFRIGERATION AND AIR CONDITIONING MAGAZINE ARE DEFINITELY IN THE AIR CONDITIONING BUSINESS !!





## TWICE A YEAR *is not enough*

Year-round air conditioning systems should have year-round maintenance to assure maximum operating efficiency and equipment life. Here are some specific recommendations for periodic service between regular spring and fall checkups.

**by Lincoln Scafe**

Manager, Service Department  
The Trane Co.

**T**ODAY'S air conditioning plant deserves good periodic care the year around, not just the customary spring and fall checkups at the time the system is started up or shut down. If some sort of regular year-round maintenance program is followed, any air conditioning system will pay off with years of good dependable service, to the advantage both of the user and the contractor who installed it.

Certainly there are a great many items within an air conditioning system which require attention at the beginning of each cooling season. The same holds true for the close of the cooling season. In far too many cases, however, inspection and maintenance are performed only when a breakdown occurs and perhaps at

the time the system is started up at the beginning of each hot weather period.

There are no shortcuts to adequate year-round servicing of air conditioning equipment, but here are some suggestions that will make the complete job easier. By following them it is possible to increase the life and efficiency of any air conditioning installation.

Before considering the frequency of maintenance or inspection periods, let us first establish that there are two times in the year when a complete changeover must be made within the system. These changeovers occur in the spring and fall, when changing from heating to cooling and from cooling back to heating.

These two periods are important ones. A major por-

## CHECK LIST FOR YEAR-ROUND AIR CONDITIONING SERVICE

	Start Up	Monthly S W	Shut Down
<b>COMPRESSORS</b>			
Lubricate Motor Bearings	•	•	•
Check Drive	•	•	
Check Oil Level	•	•	
Check Head Pressure	•	•	
Check Suction Pressure	•	•	
Check Pressurestat Settings	•		
Check Rotation	•		
Slack Off Belts			•
Align and Adjust Belts	•		
Check Head Belts	•	•	•
Check Cylinder By-pass Pressure at Setting	•		
Check Oil Pressure	•	•	
<b>WATER COOLED CONDENSERS</b>			
Check Water Regulating Valve for Best Economy	•	•	
Drain Condenser	•		•
Reconnect Condenser Piping	•		
<b>EVAPORATIVE CONDENSERS</b>			
Lubricate Motor Bearings	•	•	•
Grease Fan Bearings	•	•	•
Grease Pump Bearings	•	•	•
Check Drive Belts		•	
Slack Off Belts			•
Check Rotation of Fans	•		
Check Condition of Coils (Scale)		•	•
Check Spray Nozzles, Clean If Necessary	•	•	•
Clean Drip Pan & Drain		•	•
Clean Water Strainer		•	•
Clean Pump Strainer		•	•
Clean Air Intake Screen		•	•
Check Float Control	•	•	•
Drain Water Piping & Drip Pan			•
Reconnect Water Piping	•		
Align and Adjust Belts	•		
Check Fans for Alignment	•		
<b>AIR UNIT</b>			
Lubricate Motor Bearings		•	•
Grease Fan Bearings		•	•
Grease Pump Bearings		•	•
Check Drive Belts		•	•
Check Fans for Alignment	•		
Check Filters		•	•
Clean Expansion Valve Drip Pan & Drain			•
Clean Drip Pan & Drain			•
Clean O.A. Intake Screen		•	•
Check Expansion Valve Adjustments	•	•	
Clean Pump Strainer		•	•
Check Spray Nozzles, Clean If Necessary		•	•
Drain Water Coils (Water Cooling)			•
Reconnect Lines to Water Coils	•		
<b>CONTROLS</b>			
Clean Commutators D.C. Motors		•	•
Check Thermostat Setting & Clean Points	•	•	•
Check Contact Points in Starters. Clean If Necessary		•	•
Check Steam Valves & Traps, Dirt, Leakage, etc.		•	•
Check Damper Motor	•	•	•
Observe Operation of System	•	•	•
Check Controls on Water Cooler	•	•	
Air Controls — Drain Water		•	•
Clean Air Compressor Intake		•	•
Check Air Compressor Oil		•	•
Oil Air Compressor Motor		•	•

tion of the maintenance work on the system can be accomplished at these times. The amount of work can be greatly reduced if good periodic attention is given throughout the year. In this connection there are three important points to be considered.

First, it is important that a program of periodic inspection be initiated. The work can be done either by the owner's maintenance personnel or by a reliable air conditioning service contractor.

Second, it is important to see that once such a program is started, it is kept up and each inspection made carefully and completely. After all, there would be no point in conducting such a program if the inspector did not carry out his work faithfully and consistently.

Third, it is important that records be kept of each inspection, indicating the work performed and the parts or material required. From these records the maintenance man and the owner will always know the frequency of replacements, and have a good running account of the cost required to maintain the air conditioning system.

To assist in the program a complete check sheet should be made up to cover the system. The check sheet should be printed in such a way as to provide a record as well as a check-off list for inspection points. This could be done on a single sheet to cover a one year period, or on a form that would be complete after each inspection.

A suggested form is shown in this article together with some notation on the work involved. You will note that in our check sheet we have divided the inspection periods into four columns: spring start-up, summer, winter and fall shut-down. In each column are dots indicating those points to be checked during the different inspection periods. Where no dot is shown, that particular point of inspection may be skipped during that period of the year.

As mentioned previously, it is important that each spring and fall the entire air conditioning system be gone over carefully and checked for signs of wear and deterioration. Through the winter months, when cooling is not required, the maintenance man will have a good opportunity to make repairs of a preventive nature.

### The Refrigeration System

There are three important things to protect in the refrigeration system: the compressor, the motor driving the compressor, and the refrigerant.

Cooling required in the colder months can usually be accomplished with outside air. It is not necessary for the refrigeration equipment to operate. In the fall, the refrigeration system should be pumped down and the refrigerant valved off in the condenser or receiver. By confining the refrigerant in the part of the system with the smallest number of joints, chances for loss will be minimized. Preventing loss of refrigerant is most important in shutting down a system.

After pumping down the refrigerant, the piping and vessels in which it is stored should be checked for leaks with a halide torch. If leaks are found in the condenser

***"Today's air conditioning plant deserves good periodic care the year around,  
not just the customary checkups at the time of start-up or shut-down."***

---

or receiver, the refrigerant should be removed from the system and leaks repaired. The system should be pressure tested after repairing. When pressure testing is completed the system should be evacuated with an auxiliary vacuum pump. The refrigerant should then be charged back into the system and the system pumped down.

In the spring when the valves in the system are opened, the system should again be checked for refrigerant leaks. If, when opening the valves, only a small amount of refrigerant is allowed to pass from the condenser into the rest of the system and the system checked for leaks, a large amount of refrigerant can be saved should a leak exist.

### **The Compressor Unit**

When the refrigeration system is pumped down, the compressor should be valved off to prevent any loss of refrigerant through the compressor. If the compressor unit is belt driven, the motor should be shifted toward the compressor to lessen the tension on the belts. This prevents the drive belts from taking a "set". In the spring when the compressor unit is being readied for the summer months the belt drive should be adjusted so as to give the proper belt tension. This is a good time to check the condition of the belts themselves and to order replacements if necessary.

If the compressor and motor are connected by a drive coupling, the coupling should be examined for tightness and wear.

The drive motor should undergo an annual cleaning. If the motor has ball bearings, the existing grease in them should be removed and replaced.

Once a year, the compressor should be checked thoroughly to determine if parts need repair or replacement. Overhaul services are best performed in the colder months when the unit is out of operation. If the crankcase oil is dirty or contains sludge it should be drained from the compressor, the crankcase cleaned, and new oil put in.

### **Water Cooled Condensers**

In the fall, water cooled condensers should be drained and checked for scale and mud. If the condenser tubes are fouled, they should be cleaned to deliver maximum efficiency. If the condenser is located in an area where sub-freezing conditions are experienced, water should not be allowed to remain in the condenser, in the supply lines, or in the fittings.

### **Towers and Evaporative Condensers**

Due to location and methods of evaporative condenser and cooling tower operation, complete and careful maintenance is required to preserve and prolong their operating efficiency. The fact that they are continuously handling warm moist air promotes fouling and deterioration. If not attended to periodically, their operating efficiency will be lost rapidly.

The unit should be drained at regular intervals and all sediment flushed from the sump. In the fall and spring, all metal surfaces should be examined for signs of rust. Where corrosion is taking place, the surface should be scraped or cleaned with a wire brush. The bare metal should then be covered with a protective coating of good chlorinated rubber base paint.

The following four suggestions have to do with care for working parts of the evaporative condenser:

1. Check the condition of the condensing coil. If scale has formed, it should be removed.
2. Spray nozzles should be checked and cleaned if necessary.
3. Pump strainer, water strainer and air intake screen should be flushed and cleaned.
4. Float controls should be inspected and repaired as necessary.

In the fall, the entire unit should be prepared for winter inactivity. The fan motor and drive and the water pump and drive should be removed and taken indoors, or at least protected from the elements. If this is done each year, the work of placing the system into operation in the spring will be greatly reduced.

When shutting down the tower or the evaporative condenser in the fall, all points should be examined for low spots where water might collect and freeze, thus causing breakage. If such a condition should be discovered, it is suggested that the piping be disconnected at certain points to permit venting and complete drainage.

When water is drained from the pump, the pump should be protected against corrosion while it is allowed to remain idle. In many installations it may be possible to fill the pump with a light oil. When placing the pump in operation in the spring, the major portion of oil can be poured out of the pump and the remaining oil flushed from the pump by the water passing through it.

Wherever drives include belts, the belts should be removed and stored indoors during the winter months.

*Continued on page 68*

# NOW YOU'RE TALKING!



Two-way radio enables this Newark air conditioning contractor to increase his service organization's efficiency by 15%, and keep 5000 customers satisfied

by Paul A. Greenmeyer

Radio Corp. of America

**H**OLDING and serving more than 5000 accounts in the Newark metropolitan area calls for efficient operating procedures and the kind of service that makes satisfied customers, according to Howard Dornbush, vice president and general manager of Liberty Fuel Oil Co., Chrysler Airtemp air conditioning contractor-dealer. One way to get that competitive edge, he says, is by use of two-way radio to tighten and centralize control of operation.

Radio helps his business, Dornbush says, in the following ways:

1. Rush calls can now be handled with the regular crew. Formerly three extra men had to be added.
2. Travel time is cut approximately in half.
3. Miles-per-call rate has been reduced, representing another saving.
4. Over-all efficiency of the company's servicing operation has been increased by 15%.

Liberty employs a duplex, two-frequency system. Duplex means that two-way conversations can be held. The dispatcher can both talk to and receive from the

men in trucks and cars. Two-frequency means that a separate frequency is used for mobile and for station transmission. As a result, the men in cars can hear all transmissions from the office, but cannot hear one another. This enables the office to assume complete control of the system and of all operations.

Liberty uses what is known as "Citizens" radio. This is the type that can be obtained for a business operation conducted by a U. S. citizen. Procuring the necessary FCC license is easy, and anyone who can handle a telephone can operate the radio.

Liberty's radio dispatch office is located at the warehouse and service center at Badger Ave. in Newark. This controls the radio transmitter, which is located some eight miles away—at a high spot in order to give maximum coverage. The dispatch office and transmitter are connected by a leased line.

From the dispatcher calls go out to the various service and installation men who are traveling about in their cars and trucks. One car and nine panel trucks are equipped with mobile radio. The radio





**DRIVER** of each service truck keeps in touch with the office through direct radio contact with the service dispatcher (left).



**SERVICE MANAGER** B. R. Morrison closely supervises operations of all his men with the help of the 2-way radio in his car.

transmitter is contained in a metal case approximately 15"x20"x5" and is powered by the regular auto battery. Controls, a loudspeaker and a microphone are mounted on the dash. Thus, the driver can receive and send whether he is driving or parked.

Radio is used for dispatching service men for air conditioning and fuel oil heating work. The service area, covering a radius of some 15 square miles, is divided into nine zones. When a call comes in, it is radioed to the driver in that particular zone. When one zone is overloaded, a man is moved from an adjoining zone. This system has resulted from investigations of other company dispatching systems combined with Liberty's own planning.

"Using this system," reports Dornbush, "we give out only one call at a time, whereas we formerly gave three or four at a time and as a result our men frequently crossed each other on the road. We now save this duplication of effort."

Radio is used for contacting the service and in-

stallation manager while he is on the road so that he can reach problem areas fast. Before, he was gone for the entire day and it would be practically impossible to reach him—until he phoned in.

"We now have our men start out from their homes," explains Dornbush, "rather than report in to the office first. This saves considerable travel time. In addition, our men ordinarily required about half an hour to pack tools and take care of miscellaneous matters when checking in at the office. Now, they only check in two or three times a week to replenish tools and supplies.

"Radio is used to give the men information directly from the office, without waiting for them to contact us. For example, when a job is short on parts, we can check other men and arrange to have one, who has the parts, meet the man who needs the parts; or we can call a supplier and arrange for pickup.

"When a customer phones the office regarding a  
*Continued on page 72*



**INSTALLATION WORK** forms a big part of Liberty's business, provides plenty of work for the company's own sheet metal shop, a section of which is shown in the photo above.

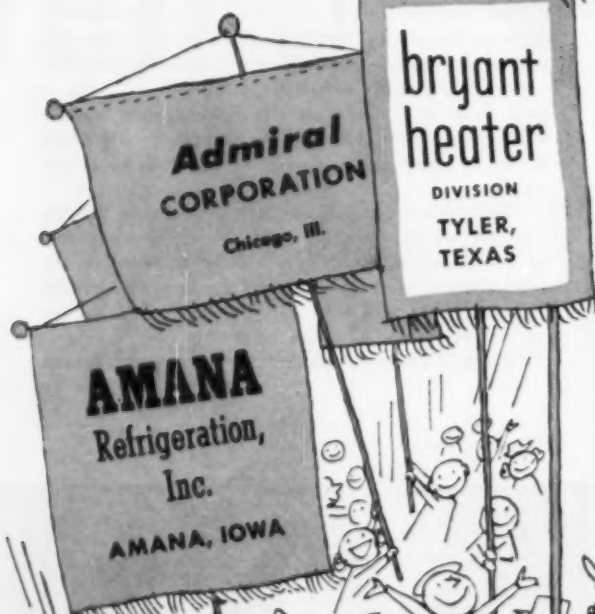


**MERCHANDISING DISPLAY** of air conditioning units in the firm's showroom is examined by Howard Dornbush, vice president and manager of the Liberty organization.

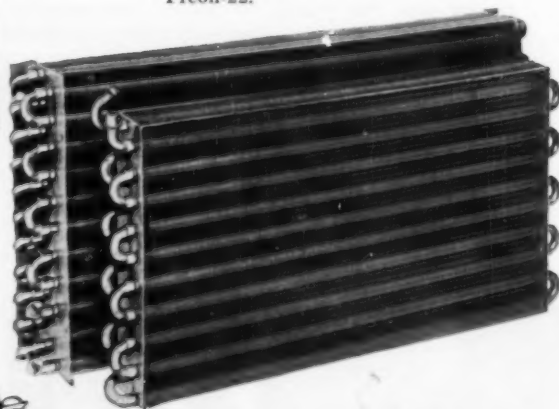
**MORE  
FAMOUS NAMES  
SELECT**

**McQuay**

**RIPPLE-FIN COILS  
AIR CONDITIONING UNITS!**



**bryant  
heater**  
DIVISION  
TYLER,  
TEXAS



**EMINENCE** of the manufacturers of air conditioning equipment who rely on McQuay to supply them with Ripple-Fin coils for their air conditioning units is the best recommendation for any product.

More and more famous names are buying McQuay proved and preferred line of coils . . . the complete line offering all of these advantages:

- Coils constructed with copper tubes and aluminum fins.
- Wide variety of fin spacings, rows deep, fin heights, finned lengths and circuiting patterns for maximum flexibility in custom engineering to meet specific applications.
- Staggered tubes and continuous corrugated fins with full fin collars for maximum heat transfer.
- Ripple-Fin edges for greater strength and more pleasing appearance.
- Latest procedures for cleaning, degreasing, dehydrating, and sealing of coils for shipment, insuring maximum protection.
- Coil construction approved by Underwriters Laboratory for use as evaporators or condensers with either Freon-12 or Freon-22.

**Maximum heat transfer efficiency of  
Ripple-Fin Coils is a McQUAY EXCLUSIVE!**

Only McQuay gives you Ripple-Fin surface—the product of years of research that produced the ultimate in heat transfer for any weight metal as well as construction ruggedness and eye appeal.

**McQuay INC.**

★ AIR CONDITIONING ★ REFRIGERATION ★ HEATING

Write for engineering assistance on any coil problem. McQUAY, INC. 1643 Broadway N. E., Minneapolis 13, Minn.

Circle No. 46 on Reader Service Card





**ALL THE SUPPLIES** needed to complete normal air conditioning or refrigeration equipment installations in one call can be carried in this new installation-service truck built for Refrigeration Sales Corp., Cleveland. Special pipe rack permits carrying as much as a ton of pipe to the job, in standard lengths of 20 or 21 feet. Side compartments are water-tight.



**CURB SIDE** of the specially-built installation-service truck used by Refrigeration Sales Corp. has compartments designed for storage of installation materials which are most likely to be needed at the job site. Note tray at top of long center section where small parts are kept separated and handy. Shelves in front compartment are adjustable to accommodate various sizes of materials.

## Special Installation Truck makes it possible for this contractor to

## *Finish the Job in One Call*

**U**SE of specially designed installation truck bodies is making it possible for Refrigeration Sales Corp., Cleveland air conditioning and refrigeration contractor, to complete virtually all of its normal air conditioning and refrigeration installation jobs in one call, using a two-man crew.

Standard practice for the company has been to deliver major items of equipment for a particular job to the site in a separate truck, and then send along an installation crew to hook up the equipment. The installation truck carries such materials as power tools, welding equipment, drills, pipe, fittings, etc.—all of the various tools and supplies necessary to complete the installation.

A study of installation time records, however, showed that the trucks the company had been using did not permit all of the materials to be carried to the job in normal lengths, or in adequate quantities. As a result, it was often necessary for one of the two installation mechanics to leave the job and come back to the shop for additional supplies, or to phone in a special request for this material. This increased materially the time required for installation, and since most jobs are obtained on the basis of an installed price, it was reflected in the company's job costs.

Figuring that the answer was a truck body especially adapted to his firm's specialized requirements, Warren W. Farr, president of the company, took the problem to Stahl Metal Products, Inc., Cleveland truck body

builder. Between them, they worked out a design that, Farr believes, meets most of the situations his installation men are apt to encounter.

The body, mounted on a three-quarter ton chassis equipped with "helper" springs—an extra set of springs set slightly below the regular springs—is equipped with a rack which permits the carrying of as much as a ton of pipe in standard lengths of 20' or 21'. Previously, the crews had to carry pipe in shorter lengths, and join them together at the job site.

The rack, which is divided into three sections, is attached to the front bumper of the truck, and to the front and back of the truck body. It is made of heavy angle iron, and is equipped with a chain and spring hold-down arrangement so that the pipe can be secured from rolling or slipping. The sectional divisions make it possible to distribute the load evenly when large weights of pipe are carried. When a small amount of pipe is loaded, only the center section is used.

Side panels of the truck also have been designed specially for usefulness in refrigeration and air conditioning work. For one thing, all compartments have been made water-tight by means of a channel built around each door which carries off all water, and prevents it from reaching any piece of equipment in the compartment itself.

Each side panel has been planned for maximum convenience to installation men. The curb side, for ex-

*Continued from page 73*

# Air Conditioning

## FOR INDUSTRIAL PROCESSING

Installations of this type often involve the application of standard equipment in unusual ways in order to provide the specific conditions required. Here are some of the tricks which make it easier.

by Edward Dowis

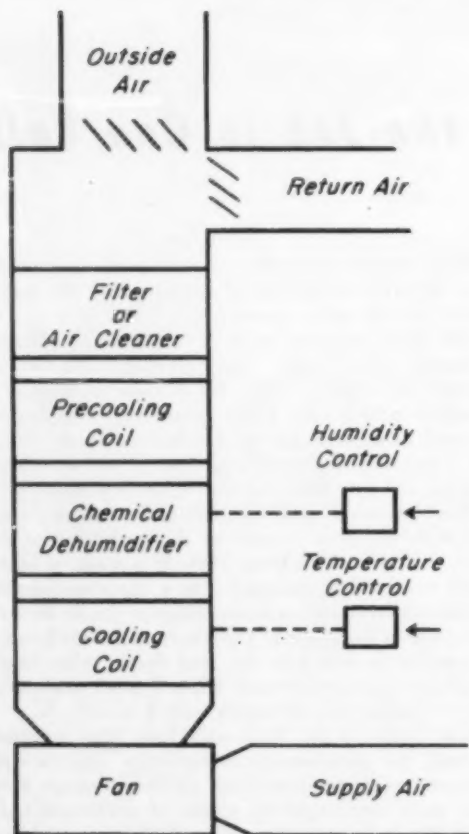


FIG. 1 — LOW HUMIDITY SYSTEM air flow diagram shows an arrangement of filter or electronic air cleaner, precooling coil, dehumidifier, and cooling coil, by which any degree of cooling and dehumidification within the capacity of the equipment can be maintained.

**M**OST contractors and engineers are familiar with various methods of using standard equipment to maintain desired comfort conditions at any predictable load. In order to provide conditions favorable for industrial processing, however, standard equipment may have to be applied in unusual ways and special items provided, such as are rarely required in comfort systems. Consideration of ways by which industrial requirements are being met is both interesting and profitable.

Any or all conditions important in comfort conditioning may have to be controlled in an industrial system but probably at very different values. These are temperature, humidity, cleanliness and air motion. Where workers are employed in processing rooms, a compromise may have to be made between conditions most suitable for processing and those tolerable by workers.

Industrial air conditioning is used to improve the quality of a product or make its manufacture more rapid or economical. This is accomplished by controlling such procedures as chemical reactions, biochemical reactions, moisture content or regain, processes affected by airborne contaminants, crystallization, and effects of static electricity.

Conditions most favorable for standard operations have been determined in practice and will be specified by the purchaser. Experimental projects may have to be tried in different atmospheres to determine which is best, so it is well to design a system with sufficient flexibility to meet any requirements. As examples of extreme industrial requirements, certain electrical insulation winding operations require temperatures around 105 F at 5% or less relative humidity, while food preparation may require 95% humidity at any temperature from 35 to 75 F. It is important to know



how air conditioning affects the six fundamental processes previously itemized.

Many chemical reactions can be hastened or retarded by controlling the temperature and humidity of the surrounding atmosphere. Drying of varnishes includes oxidation. High relative humidity slows down the process, allowing time for escape of gases which would otherwise cause bubbles. Temperature is equally important and must be precisely controlled to obtain uniform production.

Many operations in such industries as the manufacture of synthetic fibers, plastics, photographic processing and countless others require that solutions be kept at prescribed temperatures to control rates of reaction. Relative humidity control is used to maintain solutions at proper strength.

Such processes as fermentation, incubation, bacteriology and other organic reactions are widely used in the manufacture of food and pharmaceutical products. Such processes may require cycles of heating, cooling, humidifying and dehumidifying. An example is the

ripening of bananas, which may require heating to bring the room up to a ripening temperature of 70 to 72 F, and then cooling after the ripening process begins producing heat. The rate of temperature change may have to be held to 2 degrees per hour, with the final room temperature determined by the ripening time desired.

Other requirements differ from those of comfort conditioning. In the case of banana curing, no ventilating air is admitted since the gaseous products of the process are conserved to improve flavor and color. Ethylene gas may be admitted for the same purpose. Humidity is maintained at about 95%.

### Bakeries Are Big Users, Too

Bakeries are important users of process air conditioning, since dough rooms need to be held at about 80 F for proper fermentation and controlled humidity at from 65 to 85% as required to condition the surface of the loaf for escape of gas. Mixing, icing and storage rooms require temperatures ranging from 32 to 95 F and relative humidity from 50 to 85%. Quantity production of uniform quality requires that each operation be carried out under precisely controlled conditions.

Air conditioning is used to limit or prevent organic reaction in the preparation of certain cereal foods, including macaroni and allied products. Fermentation beyond the amount desired is prevented by removal of water by proper control of temperature and humidity.

The terms moisture content and regain refer to the percentage of moisture in a material. Moisture content is the more commonly used and refers to the percentage of total weight which is moisture. Regain is the ratio of weight of moisture to the bone dry weight of the material in which it is contained. It is expressed in percentage and is somewhat higher than moisture content.

### Hygroscopic Materials Cause Problems

Hygroscopic materials, and most materials are hygroscopic to a greater or lesser extent, tend to absorb or lose moisture depending upon temperature, humidity and other conditions such as thickness and density. Many products must be processed, stored and delivered with proper moisture content, since workability, dimensions, weight and other important qualities are widely affected by contained moisture.

Hygroscopic materials assume a condition determined by the temperature and relative humidity of the atmosphere to which they are exposed. The U. S. Bureau of Standards and various industrial research groups have prepared tables showing what air conditions will produce a desired moisture content or regain in a particular material.

It should be remembered, when calculating cooling and heating loads, that when moisture is absorbed by hygroscopic materials the latent heat of condensation is given off as sensible heat. Likewise, sensible heat is absorbed when moisture from such materials is vaporized to the atmosphere.

Certain confectionery and drug manufacturing operations require crystallization of solids, usually sugar,

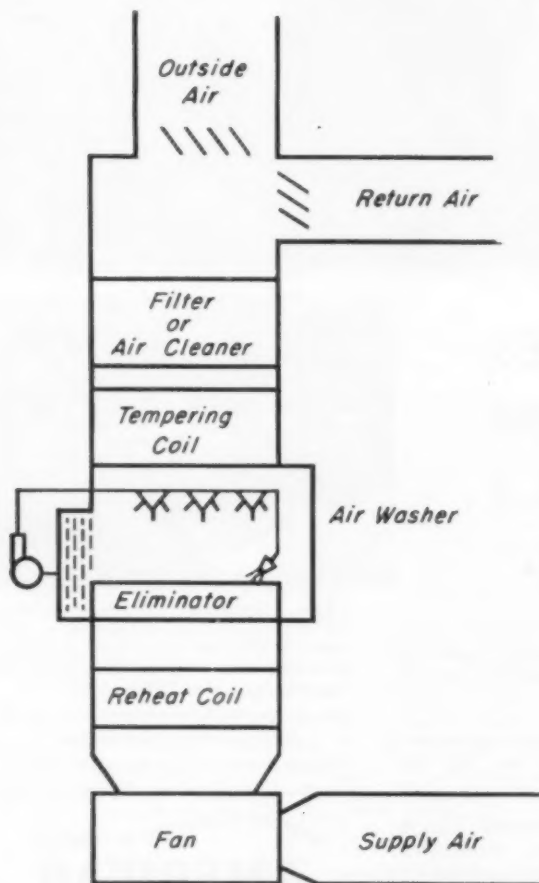


FIG. 2—HIGH HUMIDITY SYSTEM air flow diagram illustrates a system that will cool and humidify when air is drawn through the recirculating water until the air is saturated at water temperature.

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**"...and we use AMERICAN VE's exclusively to help maintain our reputation," says Nat Felton, a leading New York contractor.**

"We are what you might call a mechanic's mechanic," explains Mr. Felton, president of Union Installations. "We don't sell refrigeration or air conditioning. We just make the installations. If jobs go sour, we don't get any more business. It's as simple as that. We've been using American Vibration Eliminators for years because we've found we can depend on them. They help us keep the business coming in."

**YOU CAN USE AMERICAN VE'S WITH CONFIDENCE BECAUSE—**

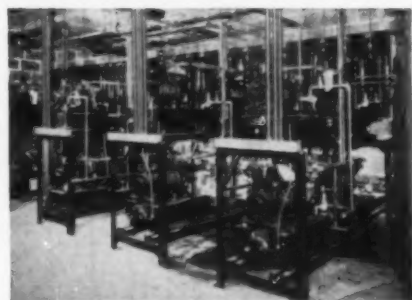
**The right metal does the job.** The special tin-bronze alloy (98¾% copper, 1¼% tin)—the result of American

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**Clean, dry, tested, protected.** Snip the end of the vaporproof polyethylene bag and you have a factory-fresh unit to install in the line.

**Packaged for your convenience, protection.** The new boxes are sturdy, easy to open, easy to identify. No confusion or fumbling.



Union Installations recently completed this big supermarket installation — does about 20 jobs like this a year, averaging 20 compressors each. It also installs air conditioning, up to 225-ton jobs.

**NOW listed by Underwriters' Laboratories through sizes 3½" O.D.**

WHEREVER CONNECTORS MUST MOVE  
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 For American Vibration Eliminators  
 see your  
**ANACONDA®**  
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size and distribution of crystals is determined by the rate of cooling. The relative humidity and temperature of air supplied over the coating vessels are most important in insuring a uniform product.

The effects of static electricity make processing of such materials as textiles and paper very difficult. This is particularly true in the printing trades. Where flammable materials are being handled, static electricity must be eliminated because of fire hazard.

### Licking Static Electricity

The most simple method of eliminating the effects of static electricity is to maintain a relative humidity high enough to carry away static charges before they can reach the objectionable stage. This usually can be accomplished with a 50% humidity, but a higher value may have to be maintained where hot material or machinery is being used.

In process air conditioning, the question usually arises as to whether to use surface coils or air washers for heating, cooling and dehumidifying. Humidifying, of course, requires some form of spray, steam or extended water surface. Characteristics of the load and economic considerations will usually indicate which is preferable.

### Surface Coils vs. Air Washers

Air washers, formerly used almost exclusively in larger installations, are now more popular for industrial systems than for comfort. They are versatile in that they can humidify, dehumidify or cool air, and at the same time can clean it and reclaim vapors where desired. Dehumidification will occur whenever the spray temperature is held below the dew point of the air passing through it. Humidification can be accomplished by controlling water temperature above the dew point of the air.

Many cleaning requirements are met with air washers. The sprays pick up vapors, while solids are removed by flooded eliminator plates and washed to the sump. Removal of vapors is a disadvantage in some processes, notably the cur-

ing of certain fruits, where vapors are recirculated to improve flavor and appearance. Surface coils are indicated for such applications.

Where air washers are used in an industrial system, construction of corrosion resistant metals should be considered. Sprays may collect highly corrosive vapors. Elimination of corrosion permits more thorough cleaning, which helps prevent formation of algae and dirt incrustation.

Surface coils are often used to supplement the air washer. A pre-heating coil before the washer and a reheat coil after it permit almost any degree of humidification by merely recirculating water through the sprays without either heating



or cooling it. Cooling and dehumidification are usually accomplished by regulating the water temperature.

Where the moisture load is very heavy or where very low humidity must be maintained, chemical adsorbers or absorbers are often advisable or necessary. An adsorber is a chemical, such as silica gel, which has an affinity for water vapor, which it condenses and holds within cells but does not change itself. Absorbers also absorb water vapor but themselves also change either physically or chemically. Various chemical dehumidifiers are available, using either liquid or dry adsorbers or absorbers. Properly applied, they can remove practically all moisture from air.

The dry bulb temperature of air leaving a chemical dehumidifier is always higher than when it enters. This is due to the liberation of heat from condensation. Also, the

chemical is heated to reactivate. Performance and capacity can be improved by cooling air before it enters the dehumidifier. It may also be necessary to recool it after drying.

### Two Methods Outlined

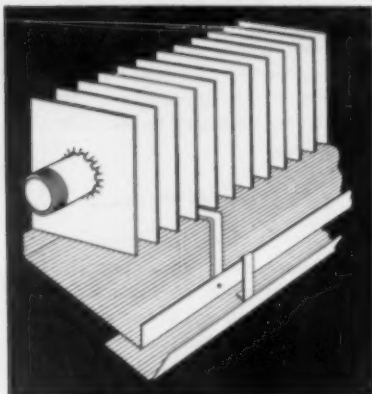
Fig. 1 shows an arrangement of filter or electronic air cleaner, pre-cooling coil, dehumidifier and cooling coil by which any degree of cooling and dehumidification within capacity of the equipment can be maintained. The final coil is controlled by room temperature. The humidity controller should sense conditions in the place to be controlled. The precooling coil may be held at a constant temperature, use available cooling effect of water, or be controlled by return air conditions as economy and performance indicate.

A humidifying system is shown in Fig. 2. This system will cool and humidify when air is drawn through the recirculating water until the air is saturated at the temperature of the water. Pre-heating the air in a tempering coil increases the rate of humidification. Because heat is required to humidify, a reheat coil is usually necessary downstream from the washer, controlled by room temperature.

### Control Combinations Vary

Water to the air washer sprays may be passed through a heat exchanger and be heated or cooled. This can also be accomplished by a heat exchange coil in the sump. When water temperature is thus controlled, the tempering coil may be unnecessary. The washer can be used as a dehumidifier and air cooler when spray water is chilled. Filters or air cleaner will not be required where the washer can maintain the desired degree of cleanliness.

No attempt has been made to detail a control system. The tempering coil may be controlled by a humidity controller and the reheat by room thermostat. The possible control combinations are almost limitless and will be determined not only by characteristics of the equipment, but also by the load and conditions to be maintained.



## FRICK Square- finned pipe

Is ideal for cold storages, freezers, food processing and meat packing plants, etc. Manufactured from 2" dia. F.W. steel pipe and 7" square 14-gauge fins, Frick finned pipe gives maximum heat transfer per dollar invested. Each fin is bonded to the pipe under tons of hydraulic pressure. All assemblies are hot-dip galvanized.

These new Frick finned coils require only one-quarter of the space needed for bare pipe having the same surface. This new finned pipe is available in lengths of 5', 6'8", 10' and 20'—and with fin spacings of 1" and 1 1/2"—to fit every application.

See your nearest Frick Branch or Distributor for complete details, or write for Bulletin 158.



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## USEFUL LITERATURE On Air Conditioning

To obtain the information described below, simply circle on the postcard in this issue the key numbers of the items you wish to receive. We will forward your requests to the companies concerned.

**SUMMARY** of the water conditioning products and services of Hagan Corp. and its three subsidiaries: Calgon, Inc., Hall Laboratories, Inc., and Buromin Co., is provided in a new 28-page bulletin (GSP-901) released by the corporation. The booklet pictures and describes various products produced by each firm. Salient features and applications are also discussed and a short history of the parent corporation and each of its subsidiaries is included.

Circle No. 121 on Reader Service Card

**COMBINATION WATER-AIR** cooling unit with new "Soaker Coil" that cools refrigerant by "perspiration", is described in words and pictures in a 4-page bulletin issued by Harvey Hill, Inc. The 2-color folder lists complete specifications, product design and construction characteristics, and is illustrated with diagrammatic drawings and application photographs.

Circle No. 122 on Reader Service Card

**EXHAUST FANS** for business and commercial applications are pictured and described in a 4-page folder available from American Blower Corp. The 2-color brochure contains complete performance and dimensional data for each of the 25 different direct-drive units in the new Model G line.

Circle No. 123 on Reader Service Card

**UNIVERSAL PUMPS** for circulated water, heating and cooling, systems are described in text and pictures in a 4-page, complete line folder of Bell & Gossett Co. The 2-color illustrated brochure lists product features, typical specifications, applications, and contains descriptions of motor and pump components. Capacity chart, size and dimensional tables are also included.

Circle No. 124 on Reader Service Card

**DRY-TYPE FLUID COOLERS** are illustrated and descriptions of actual applications, including gas compressor intercooling, are contained in an 8-page bulletin (S-395) available from Trane Co. Booklet contains complete information on construction, performance, and maintenance of the various sizes and models available, as well as comprehensive data on each of their component parts.

Circle No. 125 on Reader Service Card

**HEAVY-DUTY FANS** for ventilating under all kinds of conditions are featured in an illustrated bulletin (AA-101) issued by Chicago Blower Corp. The literature describes in detail the function and design of the company's redesigned line of axial airflow fans.

Circle No. 126 on Reader Service Card

**AERATION PROCESS** for non-chemical removal of iron, gas, taste, and odor from water is the subject of a 4-page, 2-color folder issued by Aquatrol Ferr-X Corp. Illustrated with photographs and drawings, the folder describes operation, salient characteristics, and advantages of the process.

Circle No. 127 on Reader Service Card



**TWO-STAGE PUMPS** for boiler feed, air conditioning, and other high pressure applications are described in text and pictures in a new 6-page bulletin (5286105C) available from Allis-Chalmers Mfg. Co. Included in the two-color bulletin are dimensional tables and drawings for both frame and close-coupled types of pumps as well as performance charts and cut-away illustrations of the various units available.

Circle No. 128 on Reader Service Card

**FREEDOM IN BUILDING DESIGN**, through use of "Spotair LRC" room air conditioners, is stressed and pertinent technical data is given in a new catalog sheet of Drayer-Hanson, Inc. The 2-color bulletin lists product features, dimensions, capacities, and is illustrated with drawings and photographs.

Circle No. 129 on Reader Service Card

**AIR POLLUTION** and its control through the use of activated carbon is explored, and 62 installation categories where activated carbon is being used are listed in a new technical bulletin (E-21) available from Barnebey-Cheney Co. The bulletin also lists and describes various types of atmospheric contaminants, and 10 types of treatment to eliminate or reduce contaminants in industrial exhaust gases.

Circle No. 130 on Reader Service Card

**BENEFITS OF AIR CONDITIONING** in garment manufacturing are summarized in text and pictures in a 4-page, 2-color folder prepared by Carrier Corp. Pamphlet discusses important features and advantages provided by air conditioning and includes statements by representative garment manufacturers relating to their own experiences.

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(Turn to page 44 for more Useful Literature)

## NEED

heavy duty, large capacity water level controls? Maid-O'-Mist's No. 6900 series float control diaphragm valves are especially designed for air conditioning equipment, evaporative coolers, air washers, etc., and will accurately control water at any level. Water can be discharged upward or downward as specified.

## WATER LINE FLOAT CONTROL VALVES



✓ CAPACITIES:  
1½ gals. to  
6 gals. per minute

✓ CAST BRASS BODY

✓ COPPER FLOAT

✓ NEOPRENE DIAPHRAGM

✓ INLET AND OUTLET  
TAPPING

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BRASS  
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Available for special  
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Circle No. 35 on Reader Service Card

& AIR CONDITIONING • DECEMBER, 1955



One of three Goulds Fig. 3750 pumps circulating chilled water in air conditioning system in big color processing building of Eastman Kodak Company, Rochester, N. Y.

## They help keep roses red and violets blue

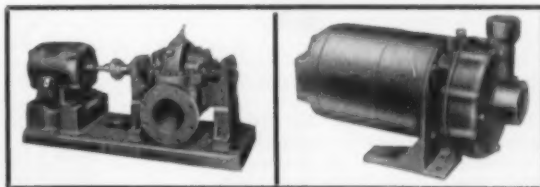
Processing color photographs requires extremely close control of temperature at all stages.

In the big color film and print processing building in Kodak Park, in Rochester, N. Y., three Goulds pumps like the one shown above help maintain the correct temperature by circulating 50° water through heat exchangers serving process work rooms.

The critical nature of the process means that these pumps must stay on the job 24 hours a day—day in and day out—and these Goulds pumps have been doing just that for the last two years.

You can insure the same kind of dependable pump performance in your air conditioning installations, too, by specifying Goulds pumps. There's a Goulds pump for every liquid handling job—designed from the experience gained over a century of pump manufacture, and ruggedly built to give long, trouble free service.

Your Goulds representative will be glad to help you select the right pumps to fit your requirements. If you prefer to write directly to our main office, your inquiry will receive prompt attention.



Goulds popular "dose-cupld" Fig. 3642 and Fig. 3643 pumps provide compact efficiency, simplicity in small installations, in sizes from ¼ to 5 HP. Capacities up to 175 GPM, and heads to 140 ft. For additional details write for Bulletin 624-A.3.

Goulds Fig. 3405 double suction pump offers many advantages for larger installations. Available in 19 sizes, providing capacities up to 6,400 GPM, heads to 260 ft. For full details write for Bulletin 721.6.



**PUMPS INC.**  
**Goulds**  
Seneca Falls  
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Circle No. 36 on Reader Service Card

# WHAT'S NEW

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## in Air Conditioning Equipment

For further information on any of these products, simply circle on the postcard provided in this issue the key numbers of the items in which you are interested. Your request will be forwarded directly to the companies concerned.

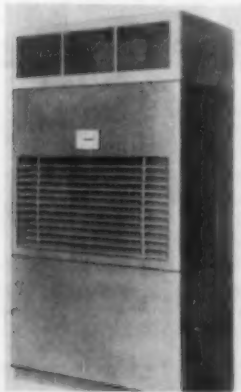
(For more New Products turn to page 36)

### Packaged Air Conditioners

**Product:** New line of self-contained packaged units for commercial and residential applications.

**Manufacturer:** Typhoon Air Conditioning Co., Inc., Brooklyn, N.Y.

**Features:** Units are available in 3, 5, 7½, 10, 15, 20, 25, and 30 ton models. Can be used as free-standing conditioners or as central systems through addition of duct work. In free-standing applications unit may be split for remote installations. Low noise and vibration level is achieved through use of spring mountings for machinery. A new all-



copper jet water cooled condenser is incorporated in the 3, 5, and 7½ ton units. Larger models have custom flush design and furnish a greater-than-capacity rating performance. Cabinets are formed of high grade furniture steel with triple thick reinforcement provided at critical spots.

Circle No. 141 on Reader Service Card

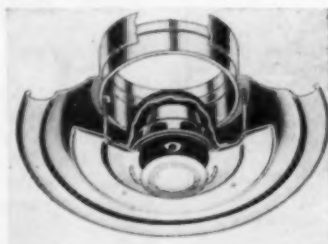
### Speaker-Air Diffuser

**Product:** Air diffuser designed to accommodate an 8", high fidelity speaker.

**Manufacturer:** Connor Engineering Corp., Danbury, Conn.

**Features:** Speaker mounts within the air diffuser and only one ceiling opening is required for both.

Unit is recommended for air terminals, plant cafeterias, manufacturing and assembly areas, and similar spaces. Air discharge does not distort sound quality. Any extended range 8" speaker may be used in



unit which is available in three neck sizes, 14, 16, and 18", with or without damper.

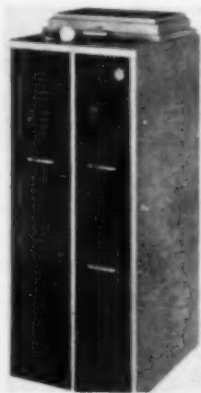
Circle No. 142 on Reader Service Card

### Residential Conditioners

**Product:** Line of central cooling systems that includes year-round, add-on and horizontal units.

**Manufacturer:** Rheem Mfg. Co., Chicago, Ill.

**Features:** "Year Rounder" units (shown) are equipped with auto-



matic zone control, and are available in 14 different models with sizes from 75,000 to 150,000 Btu heating input and 1½ to 3 tons of

cooling. All models are available with either air cooled or water cooled condensers, and are provided with summer-winter dampers for change-over of control circuits. Four models of self-contained add-on units are available in 2 and 3 ton sizes, either water or air cooled, for use with any existing warm air system. Four models of low-height, self-contained horizontal units have specially engineered coil location to permit use of unit in attic, crawl space, or with counterflow furnace. Units are equipped with automatic controls and a cooling thermostat.

Circle No. 143 on Reader Service Card

### Commercial Conditioner

**Product:** New line of self-contained commercial air conditioners.

**Manufacturer:** Gibson Refrigerator Co., Greenville, Mich.

**Features:** Units are available in 3, 5, and 8-ton models and can be installed anywhere water, electric, and drain connections are accessible. The 8-ton model (shown) has 96,000 Btu capacity, is equipped with two



compressors of 3 and 5 hp, measures 88" high, 48" wide, 31" deep, and occupies 10.3 sq.ft. floor space. Chassis slides out for easy servicing. Unit has 2-stage capacity control, permitting one compressor to operate separately, as well as automatic temperature, humidity, and pressure controls. All units have bonderized steel cabinets and are finished in grey enamel.

Circle No. 144 on Reader Service Card

### Electrostatic Filter

**Product:** "Electro-Klean" air filter that removes foreign matter from air by electrostatic attraction.

**Manufacturer:** American Air Filter Co., Inc., Louisville, Ky.

**Features:** Device operates in connection with forced air furnaces or air conditioning systems and is suitable for central systems that require no water or drain connections. Only maintenance required is annual replacement of filter cells.

**DOUGLAS MOAT**

Ace O'Hara  
Distributing Co.  
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**He sold 2  
which sold 12 more!**



**Carrier  
ICEMAKER sales  
keep snowballing!**

**It's a fact!**

Every Carrier Icemaker salesman will tell you that one Icemaker sells more Icemakers. And this amazing chain reaction can happen for you. Become a Carrier Automatic Icemaker dealer and see for yourself.

**Doug Moat proves it!**

He's a salesman with Ace O'Hara Distributing Company, Phoenix, Ariz. Here's what he says:

"I've been selling Carrier Icemakers for three years. And believe me, it's a pleasure! Of course, the weather makes Phoenix a terrific market for Icemakers, but the wide range of models and quality features of the Carrier machines make markets of their own. From just two sales I've made twelve more. And the snowball has just started to roll!"

**You sell more with Carrier  
because Carrier has more to sell!**

**More savings.** Costs for water and electricity are usually less than  $\frac{1}{3}$  the price of delivered ice.

**More models.** Flakes, cubes, crushed, or cubes-and-crushed. Wide range of capacities. 12 sizes or combinations in all!

**More benefits.** Automatic operation. Self-cleaning. Long life. Unmatched dependability.

**Write for the full facts**

Mail the coupon, and we'll have the full story on your desk in a few days. Facts about financing, prospects, promotion, profits. Get the coupon in the mail now. Don't lose a day!



**automatic ice machines**

**CARRIER CORPORATION, 321 S. Geddes St., Syracuse, N. Y.**

Tell me more. I want to start my snowball rolling.

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Business

Address

City  Zone  State

Power pack is safe at all times and requires less voltage and current than an automobile ignition system. Unit is available in complete range of sizes to fit any type installation. Circle No. 145 on Reader Service Card

#### New Packaged Units

**Product:** "Weathermaker" self-contained, water-cooled, commercial air conditioners.

**Manufacturer:** Carrier Corp., Syracuse, N. Y.

**Features:** Units are designed expressly for use in central duct systems for stores, offices, and similar establishments. Available in 2, 3, and 5-hp sizes. Reduces amount of ductwork and installation space required; permits more freedom in



location. Solid front panel contains no return air grille or openings to detract from appearance. Return air ducts can be brought in through bottom as well as back. Single ornamental control dial protected by clear plastic dome. Pre-wired electrical center. Fan assembly easily changes from top to rear for low-headroom installations. For in-the-space applications, a matching plenum and specially designed base can be added to convert the unit to standard free-blow use.

Circle No. 146 on Reader Service Card

#### Built-In Air Conditioner

**Product:** Built-in wall unit that permits integration with baseboard radiation.

**Manufacturer:** Amic Mfg. Corp., Long Island City, N.Y.

**Features:** Unit fits under any window-sill and is compatible with any heating system. Designed to meet the growing trend toward larger and lower windows. It makes possible integrated installation of baseboard heating and built-in wall air conditioner under the same window. The 1-hp unit is self-contained, silent in operation, drip-free, and weatherproof.

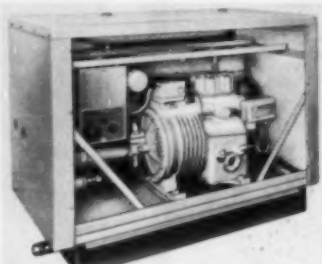
Circle No. 147 on Reader Service Card

#### Packaged Chiller

**Product:** New packaged water and liquid chiller for air conditioning and industrial applications.

**Manufacturer:** American Coils Co., Newark, N.J.

**Features:** Unit is available in sizes ranging from 3 to 15 hp. Cabinet has removable side and top panels and is insulated with a special sound deadening fiberglass. Larger



models are designed to permit "zone cooling" and are equipped with two complete refrigeration and chiller systems of equal rating that may be hooked up individually or in parallel. Cabinet is of heavy sheet metal with bonderized, hammertone finish, and entire unit is built on a solid angle iron frame.

Circle No. 148 on Reader Service Card

#### CONCEALED ROOM UNIT ANNOUNCED BY BRYANT

Development engineers for Bryant have perfected a new room air conditioner that can be installed out of sight much like a central air conditioning unit. Located completely outside the conditioned space, the unit eliminates need to block portions of windows or cut holes in walls. The air-cooled one hp model provides cooling for living room during the day and one or two bedrooms at night. Unit installs in attic, basement, or in any crawl space and connects with supply and return registers and ductwork.

For the present, all models produced at Bryant's Tyler plant will be allocated to regional sales managers throughout the country and full-scale production of the new room units will begin next spring.

#### Room Air Conditioners

**Product:** New line of room units includes "Imperial", "Custom", and "Deluxe" series.

**Manufacturer:** Mitchell Mfg. Co., Chicago, Ill.

**Features:** "Imperial" models (shown) are available in  $\frac{3}{4}$ , 1,  $1\frac{1}{2}$ , and 2 hp sizes and are equipped with "Expando-mount", a quick-mounting, air, dust, and water-tight

installation feature. Units also have "Air Flow Modulation", a rapid cooling feature; 2-speed motor, and may be mounted in a variety of ways. "Custom" units are available in  $\frac{3}{4}$  and 1 hp sizes; are supplied with automatic thermostat, 2-speed



motors, and may be had with either reverse-cycle or resistance heating. "Deluxe" models are popularly priced, available in  $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1, and  $1\frac{1}{2}$  hp sizes, are extremely compact, and may be flush mounted to avoid projecting into the room.

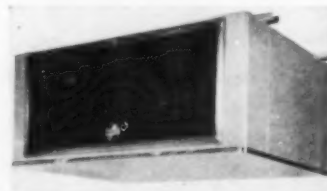
Circle No. 149 on Reader Service Card

#### Remote Air Conditioner

**Product:** Three new remote-type air conditioner models designed primarily for ceiling suspension.

**Manufacturer:** Refrigeration Appliances, Inc., Chicago, Ill.

**Features:** Basic units are adaptable to practically every need for remote cooling or heating. Units can be supplied without cabinets for fur-



red-in installation, can be used with duct systems, and permit easy access and filter removal even when installed on floor. All models have volume control dampers and 3-speed controls on direct-drive centrifugal fans. Cabinets are finished in bronze baked enamel, and are trimmed in stainless steel.

Circle No. 150 on Reader Service Card

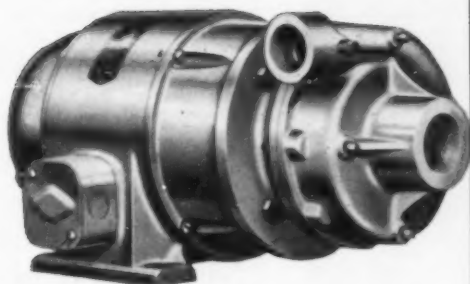
#### Plastic Pipe

**Product:** "Pressurated" plastic pipe for cold water piping between air conditioning units and cooling towers.

**Manufacturer:** Yardley Plastics Co., Columbus, Ohio.

**Features:** Product is being au-

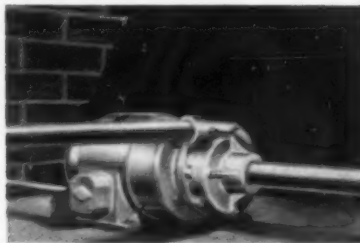




## HERE'S WHY THE ALL PURPOSE END SUCTION PUMP

*is more popular every day*

AND WHY THE  
**PEERLESS**  
*Fluidyne* TRADE MARK **LINE**  
IS ONE OF AMERICA'S  
MOST POPULAR BRANDS



### PEERLESS PUMP DIVISION FOOD MACHINERY AND CHEMICAL CORPORATION

Factories: Los Angeles, Calif., and Indianapolis, Indiana  
Offices: New York; Atlanta; Chicago; St. Louis; Phoenix;  
Fresno; Los Angeles; Dallas, Plainview and Lubbock, Texas;  
Albuquerque, New Mexico.

Distributors in Principal Cities; Consult your Telephone Directory.

### ALL PURPOSE

Peerless Fluidyne pumps can be used for almost every general purpose pumping condition where *quality with economy* is a condition of pump application.

### COMPACT

Space costs money; Fluidyne pumps fit neatly into both piping and pumping layouts as well as into sub-assemblies.

### EASY TO MAINTAIN

No special tools are required to perform ordinary pump maintenance in the Peerless line.

### ATTENTION-FREE

Ample safety factors assure performance on continuous or intermittent duty, regardless of mounting angle.

### QUALITY FIRST

Every consideration has been given in design and construction to assure long service life even under abnormal conditions. Designed with economy in first cost, installation, maintenance and operation — all without compromise in quality.

### HUNDREDS OF SIZES

The Peerless Fluidyne line is one of the broadest offered by any manufacturer. Drives: electric, belt or flexible coupled; HP range: from 1/4 to 150 hp; Capacities: up to 5500 gpm; Heads: up to 260 ft.

### QUICK AVAILABILITY

Peerless stocks its Fluidyne line at branch offices geographically located at major population centers. This stocking plus Indianapolis, Indiana and Los Angeles plants makes possible *quick* shipments of anything from a pump to a truckload.

### NEW STYLING

Pleasing, trim and compact, their sturdy exterior design makes for neat installations.

### OUTDOORS-INDOORS

Indoors or out, every general utility pumping service can use Peerless Fluidyne Pumps. In all sizes, types and models the Fluidyne line is characterized by high performance ratings.



### MAIL COUPON TODAY

#### PEERLESS PUMP DIVISION

Food Machinery and Chemical Corporation  
301 West Avenue 26, Los Angeles 31, California

Please send without obligation new Bulletin B-2300 describing Fluidyne line of fractional and integral hp pumps.

NAME

COMPANY

CITY  STATE

thorized by municipal building inspectors for air conditioning cold water applications. Piping is tested and certified as to its capacity, and is light, flexible and easy to cut. It is made entirely of virgin raw stock, is guaranteed against corrosion and resists scaling.

Circle No. 151 on Reader Service Card

#### Air Purification Filter

**Product:** "Dacor" activated charcoal filter for removal of odors,



gases, bacteria, and mold spores from air.

**Manufacturer:** Barnebey-Cheney Co., Columbus, Ohio.

**Features:** Fiber-reinforced activated charcoal strips in gridwork form provide increased exposed surface area which boosts charcoal's adsorption rate. Unit provides accelerated action, lowered air resistance, and reduced cost. Especially useful in room air coolers, forced air furnaces, and other applications which require a single season's use under average odor conditions.

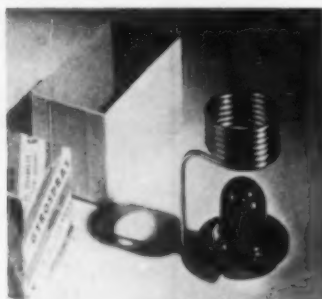
Circle No. 152 on Reader Service Card

#### Spray Head

**Product:** "Gyrospray" spray head for even distribution of low pressure fluids from discharge pipes.

**Manufacturer:** N. C. Stearns Co., Shreveport, La.

**Features:** Produces controlled spray of evenly divided fluid parti-



cles at pressures under 5 lbs. per sq. in. Offers no restriction to flow of water from 1" discharge pipe to which it is attached. Streamlined shape of revolving rotor minimizes any tendency for foreign matter to adhere to its surface. All metal parts are electro-polished stainless steel. Rotor is molded from inert, resilient nylon, and is not affected by chemical action of any inhibiting additives used in industrial cooling water. Bearing has been specially developed for this application to assure long friction-free life. Permissible ambient temperature range from -50 F to 250 F.

Circle No. 153 on Reader Service Card

#### CAYCE NAMED TO HEAD MINERAL WOOL GROUP

Eldred Cayce, manager, building products division, Tennessee Products and Chemical Corp., Nashville, Tenn., has been elected president of the National Mineral Wool Association.

Cayce succeeds E. K. Clark, vice president, Johns-Manville Sales Corp., New York. M. C. Fairfield, sales manager, Insulite Div., Minnesota and Ontario Paper Co., was elected vice president.

## "All in one" REPLACEMENT KIT

A Redmond low-cost general purpose package that has everything you need to replace worn-out motors, fans and brackets for refrigeration condensers, ventilators and humidifiers:



For Fans up to 10" at 1550 R.P.M.  
adjusts vertically 2 1/2"  
adjusts horizontally 1/2"

Here's the best way to save time and money on your replacement jobs. Redmond units are quickly adjusted. Your nearest wholesaler will be glad to supply details; or write direct for additional information.



**REDMOND DISTRIBUTORS, INC.**

Owosso, Mich.



**REDMOND DISTRIBUTORS, INC.**  
Dept. C, Owosso, Mich.

Send Replacement Kit details to:

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

Circle No. 63 on Reader Service Card

DECEMBER, 1955 • COMMERCIAL REFRIGERATION

## NEW MANUAL ISSUED ON V-BELT STANDARDS

The Multiple V-Belt Drive & Mechanical Power Transmission Association and the Rubber Manufacturers' Association, Inc., have announced the completion and issuance of their 24-page completely revised manual of recommended "Engineering Standards Multiple V-Belt Drives."

Basic changes in the revised manual include 10 pages of new horsepower ratings. These in general give increased ratings for standard quality belts throughout the generally accepted speed range; and also for the first time ratings on premium quality belts are included. The new manual shows ratings for belt speeds from 200 to 6,000 fpm.

Copies may be obtained at a cost of \$1 each from either the Rubber Manufacturers' Association, Inc., 444 Madison Ave., New York 22, N. Y., or from the Multiple V-Belt Drive & Mechanical Power Transmission Association, 27 East Monroe St., Chicago 3, Ill.

## USAIRCO ISSUES PRIMER ON HOME COOLING

Aimed primarily at the home owner, a 16-page booklet has been published by U. S. Air Conditioning Corp.

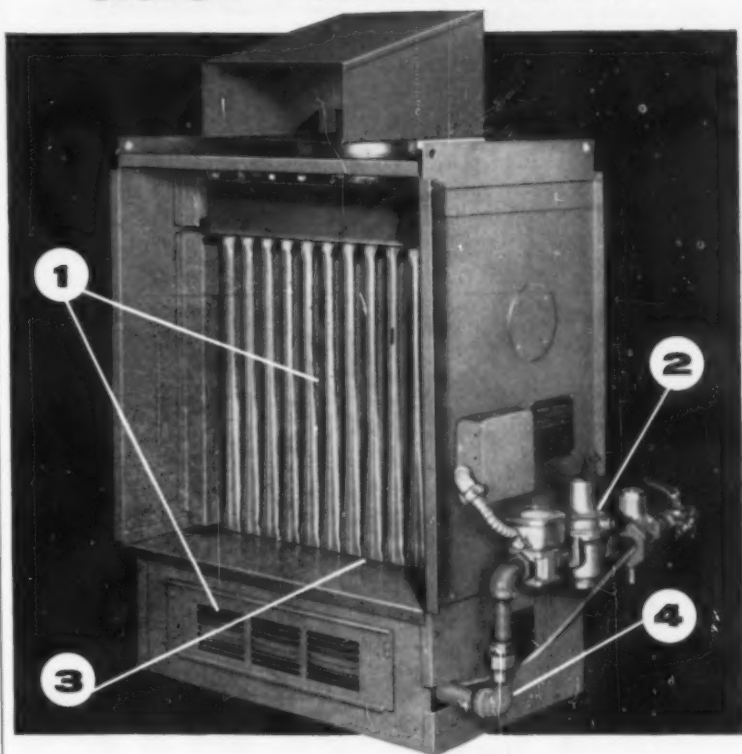
Entitled "Practical Pointers on Home Air Conditioning", the booklet gives a thorough description of cooling systems for new and existing homes, advice on selection of equipment and an analysis of proper home design for most effective and economical air conditioning. It also contains an illustrated glossary of heating and cooling terms and a simplified description of cooling equipment operation.

The booklet is available from U.S. Air Conditioning Corp., 3211 Como Ave., S.E., Minneapolis 14, Minn., for 25¢.

## DRAYER-HANSON NAMES NEW REPRESENTATIVE

Lloyd Backstrom & Co., Portland, Ore., has recently been appointed manufacturer's representative in the Pacific northwest by Drayer-Hanson, Inc. The Territory will include the states of Washington and Oregon.

# Only this gas-fired duct furnace...



## offers all these installation and operating advantages

**1. Full protection against rust and corrosion.** Stainless steel heat exchanger and burners prolong service life, lower maintenance costs, extend application possibilities.

**2. Easy access.** Entire control assembly is mounted on side of unit, is easy to get at for service regardless of where furnace is located.

**3. Fast, uniform heat transfer.** Seam-welded, gas-tight exchanger features individually-fired tubes.

**4. Non-fouling burners.** Burner ports have four times more area than conventional drilled ports . . . knife-like

edges to deter lodging of dirt or scale . . . are, in effect, self-cleaning.

### PLUS

✓ Lightweight and small bulk to minimize installation and handling costs.

✓ A choice of five sizes — 88,000 to 213,000 Btu/hr input, all AGA-approved — to meet applications including: central heating . . . booster units . . . air conditioning . . . industrial and agricultural drying, processing and ventilating.

For details, ask the representative listed in the classified phone book for Bulletin 853, or write—Modine Mfg. Co., 1584 DeKoven Ave., Racine, Wis.

# Modine

## GAS-FIRED STAINLESS STEEL DUCT FURNACES

D-1277

## TWICE A YEAR . . .

Continued from page 51

Gear boxes should be cleaned, serviced and protected against cold weather conditions. All shafting should be inspected for rust, cleaned and protected. In the spring before placing the equipment in operation all of the belts should be inspected for wear and replaced as necessary. Gear boxes should be cleaned and filled with fresh lubricant.

In the spring, all bearings should be checked for wear, tightness, alignment and proper lubrication. Worn bearings should be serviced or replaced. Grease type motor bearings should be examined, flushed and regreased.

### Air Units

At the beginning of the heating season and again at the beginning of the cooling season, the air handling units of the air conditioning system should be gone over completely as follows:

1. All motor, fan shaft and pump bearings should be inspected, serviced and lubricated.

2. All set screws and drives should be checked and tightened. If they have worked loose, the shafting should be checked for damage.

3. Drive belts should be checked for drive alignment and wear.

4. Air filters should be cleaned or replaced. Outside air intakes should also be examined and cleaned.

5. Other important components to be checked and cleaned are pumps, line strainers and spray nozzles.

6. In the fall, water cooling coils should be drained. The surfaces of direct expansion coils, water cooling coils and steam coils should be inspected for lint or dirt collection. Where necessary the coil surfaces should be cleared and cleaned. Since most of the foreign material deposited on coils is grease, a good detergent should be used to clean the surface.

### Controls and Accessories

Last, but certainly not least, are the following check points on controls and accessories:

1. Clean thermostat points.
2. Clean or replace contact points of starters as necessary.
3. Check steam valves and traps for dirt or leakage.
4. Check damper motor and action of dampers.
5. Check the condition of dampers and the damper linkage.
6. Check the seal around dampers and replace felting or other material as required.
7. Observe operation of the system.
8. Periodically, water should be drained from the pneumatic controls. The settings should be checked, adjusted or calibrated as required.
9. Clean intake on the air compressor.
10. Check air compressor crankcase oil level.
11. Oil the air compressor motor.

It is important that this plan for systematically starting up, checking, and shutting down cooling systems be followed as closely as possible if they are to be ex-

MOTOR  
CAPACITORS  
BY C-D



# CONSISTENTLY DEPENDABLE

Talk to the engineers who designed the motors you repair! Ask them why, for 45 years, C-D capacitors have been "the standard" for all the really heavy load motor starting jobs. They'll tell you: "C-D means Consistently Dependable." No wonder there are more C-D capacitors in use today than any other make! Always insist on C-D capacitors—there's just the right type for every motor made. Ask your C-D distributor for your free copy of C-D's famous motor capacitor Manual and Catalog No. 163. He's listed in your classified 'phone book. Dept. CR 75 Cornell-Dubilier Electric Corporation, South Plainfield, New Jersey.



ONSISTENTLY  
DEPENDABLE  
**CORNELL-DUBILIER CAPACITORS**

PLANTS IN SOUTH PLAINFIELD, N. J.; NEW BEDFORD, WORCESTER AND CAMBRIDGE, MASS.; PROVIDENCE AND HOPE VALLEY, R. I.; INDIANAPOLIS, IND.; SANFORD AND FUGUAY SPRINGS, N. C.; SUBSIDIARY, THE RADIANT CORPORATION, CLEVELAND, O.  
THERE ARE MORE C-D CAPACITORS IN USE TODAY THAN ANY OTHER MAKE

Circle No. 42 on Reader Service Card



pected to operate with maximum efficiency and minimum emergency service. Compared with the investment represented by the original cost of such systems, the small amount of time, effort or money which must be expended for periodic check-ups is more than compensated for by the long-time trouble-free operation which will result.

#### LENNOX FURNACE CO. ADOPTS NEW NAME

Effective Dec. 31, the Lennox Furnace Co. will change its name to Lennox Industries, Inc.

"Our tremendous growth during the past decade coupled with a wide diversification of products and services demands that we operate under an all-encompassing title," announced John W. Norris, president.

"Since a number of other furnace manufacturers have merged with some of the country's largest industries in recent months," he continued, "there may be speculation that this change in name means that The Lennox Furnace Co. is merging with some other organization. I want to emphasize that this is not the case. The only change will be in the wording of the name."

Lennox manufactures a complete line of warm-air furnaces and air-conditioning equipment backed by an organization of over 5000 dealers. This sales force is supplied by ten production plants located throughout the United States and Canada.

#### ZENDER HEADS METAL RESEARCH ASSOCIATION

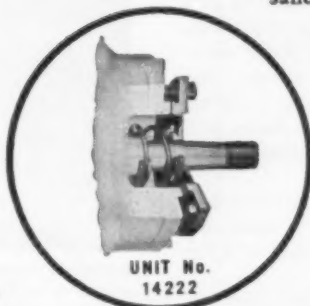
Austin R. Zender, executive vice president of Bridgeport Brass Co., was elected president of Copper & Brass Research Association at the 33rd annual meeting at Hot Springs, Va. Re-elected as vice presidents were: J. A. Doucett, H. L. Marion and W. H. Parr. New vice presidents elected were: W. M. Goss, J. P. Lally and E. A. Oliphant. T. E. Veltfort was re-elected manager. Also elected were F. L. Riggan Sr., treasurer and C. H. Pihl, secretary.

## ROTARY SEAL

## Replacement Units

EASY TO  
INSTALL  
ECONOMICAL  
EFFICIENT IN  
OPERATION

The original replacement units—  
performance-proved in many thou-  
sands of installations  
during almost a  
quarter century.



Available in a  
wide range of  
sizes for Com-  
mercial, Semi-  
Commercial,  
Air Conditioning  
and Household  
Refrigerator Compressors.

AT ALL  
LEADING  
JOBBER

"Seal with Certainty!"

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CHICAGO 14, ILLINOIS, U.S.A.

CANADIAN AGENT: 2025 ADDINGTON AVE., MONTREAL 28, QUEBEC

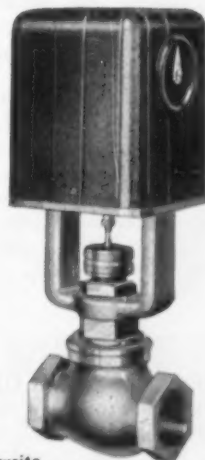


PROPORTIONING

## Motor-operated Valve

Compact . . .  
Costs less . . .

- For heating coils on package heating and air conditioning units
- Tight-closing, low-pressure for proportioning (modulating) control
- Motor operator easily detachable as a unit
- Extremely compact — largest size not over 14 3/8" x 4 3/8"
- Valve sizes 1/2" to 2", inclusive
- Greatest valve value on the market



ASK FOR  
BULLETIN  
F-3622-3  
F-4989-2

Consult nearest Field Office or write . . .

**Barber-Colman Company**

DEPT. X, 1338 ROCK STREET, ROCKFORD, ILLINOIS

Circle No. 44 on Reader Service Card

## NEW TEST FACILITIES AID TYLER RESEARCH

Creation of a new research and development department with greatly expanded facilities has been announced by Robert L. Tyler, president of Tyler Refrigeration Corp.

Chief functions of the new department are development and testing of new commercial refrigerators and freezers, from drawing board to pilot models; and accelerated, continuing program of improvement in the design and manufacture of its current product line.

The department's activities will be directed by Sven Swanson, development engineer, and a Tyler man since 1944.

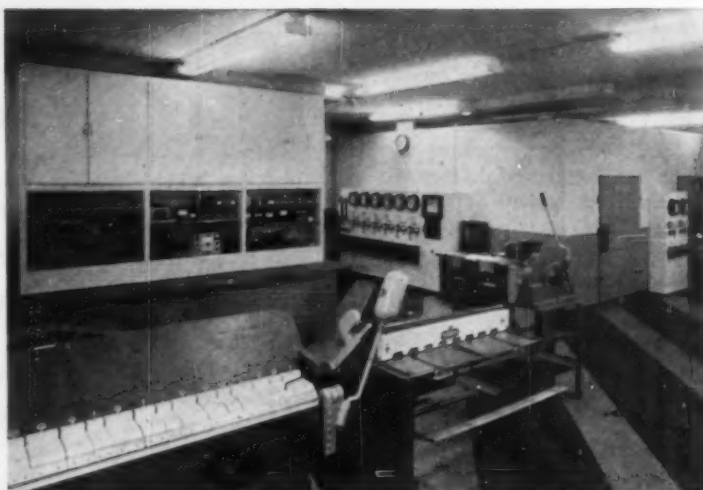
Facilities include: two spacious temperature- and humidity-controlled test rooms; complete set-up of machinery and tools for manufacture of pilot parts and models; latest test equipment for extensive, rigorous performance testing of all self-contained and remote-type commercial refrigerators and freezers, and condensing units, and modern drafting and engineering facilities.

## G.E. OPENS NEW ORLEANS APPARATUS SERVICE SHOP

A new General Electric apparatus service shop has been opened in New Orleans, La., to supplement G.E.'s Atlanta, Ga., organization which formerly handled repair and maintenance for the entire south-central region. The new service shop is equipped to repair and maintain motors, transformers, control equipment and to provide machine shop work. E. A. Woniager, Atlanta service shop specialist, will operate the new facility under the direction of H. P. Hauck, manager of the Atlanta shop.

## WOLVERINE MOVES CALIFORNIA SALES OFFICE

North California sales offices of Wolverine Tube, formerly in San Mateo, have been moved to San Francisco. Concurrently with the opening of these new office facilities, the company has appointed R. C. Cain to its staff as a new sales representative.



**GENERAL VIEW** of Tyler's new Research and Development Dept. Metal forming brake and shear in foreground are used to make pilot and special parts. Instrument cabinet at left has storage space for extra equipment. Small control panel at right is used only for testing self-contained units. Doors on either side of it lead into test rooms.



**BIG CONTROL PANEL** includes suction pressure recorders; running time clocks; pressure controls; defrost controls; head pressure gauges; ammeters, etc. Design of switch-board (right of panel) permits thermocouples to be hooked up from any piece of equipment in any parts of test rooms or on test room floor, for on-the-spot reading.

## TWO FIRMS NAMED SERVEL DISTRIBUTORS

Appointment of two additional distributors of Servel air conditioning equipment have been announced by H. R. Nielsen, manager of the division.

They are Fazio Sheet Metal Co., Peter A. Fazio, owner, in the Joliet, Ill. trading area, and Johnston-Vest Electric Corp., in the Roanoke, Va. territory. Officers of the latter company are C. D. Johnston, president; L. H. Vest, vice president, and J. B. Riggle, air conditioning manager.

## DRAYER-HANSON WIDENS COVERAGE IN SOUTHWEST

Realignment of its distribution structure in the southwest has been announced by Drayer-Hanson, Inc. Increased will be territory of Joiner-Meade-Capers, Inc., until now Drayer-Hanson representatives in the Dallas area. New territory will include Dallas, Texas "Panhandle" and five counties in New Mexico.

**BUY FROM YOUR  
REFRIGERATION WHOLESALER**



Bends as easy as  
PIE\*

You need no tools when you bend dead-soft DRYSEAL . . . just hands . . . while the special temper and ductility of DRYSEAL make it easy to flare for compression fittings without danger of splitting. Another thing you'll like about DRYSEAL is the double-crimp seal at each end of the tube. This is the final step in manufacturing, immediately following a special cleaning and dehydrating operation. This keeps dirt and moisture from entering the tube. The seal is made in such a way as not to change the diameter of the tube so that it can pass through any opening large enough for the tube itself. Tube sizes— $\frac{1}{4}$ " to  $\frac{3}{4}$ " O.D. The DRYSEAL carton, attractively designed for easy identification, contains one 50-foot coil . . . is easier to handle, light weight, economical and sturdily made to assure protection of the tube in stock and in transit.

## REVERE

### COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801  
230 Park Avenue, New York 17, N. Y.

Mills: Baltimore, Md.; Brooklyn, N. Y.; Chicago, Clinton and  
Joliet, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.;  
New Bedford, Mass.; Newport, Ark.; Rome, N. Y.  
Sales Offices in Principal Cities, Distributors Everywhere.

Circle No. 45 on Reader Service Card



\* **REVERE**

DRYSEAL  
COPPER  
REFRIGERATION  
TUBE

## NOW YOU'RE TALKING! . . .

*Continued from page 53*

problem or complaint, we can hold the call while getting in touch by radio with our man to get the other side of the story. By this means we are immediately in a position to give our customer a satisfactory and completely adequate answer.

"For handling of customer grievances by our men in the field radio is used in order to avoid use of telephone in customer's home and to obtain private conversation with our man regarding how to settle the complaint. Also, by means of radio our men report customer complaints much faster than before. This means customers are attended to promptly and hence we have a far better chance of retaining good will."

"One of the prime reasons we installed radio," explains Dornbush, "was because on telephone calls we can save a thousand dollars a year. Furthermore, it costs us a minimum of eight—and probably 12—man-hours a day to make phone calls . . . at a cost of \$3.00 per man-hour. I figure that these are minimum savings. There are additional savings, such as keeping our men in territories and not crossing over, and parking costs when trying to reach a phone."

### Provides Competitive Edge

"Radio helps our competitive situation, especially in service. We have always wanted to do something that would enable us to provide better service than competition. Radio definitely makes it possible."

"For example, a woman phoned the office for oil burner service and we immediately radioed our nearest man who was only two blocks away and was on his way before the customer finished her call. He knocked on the door and the woman asked, 'What do you want?' 'Didn't you call for oil burner service?' 'Why, I just hung up the receiver,' was the amazed reply."

"It's results like this that have gotten us new business. We procured three additional oil accounts

in our first month of operation because of exceptional service."

Dornbush was an Army radio man during the war on net control station, and hence knew something of its possibilities when he considered applying it to the business. He tried an experimental operation through use of rented equipment in a night truck over a period of one year. The result in his own words: "We discovered that one man could handle the load that formerly required two or three. Then we equipped our entire fleet."

The installation of RCA two-way radio was made in May 1954,



**RADIO CONTROLS** and microphone are mounted on the instrument panel of each service truck. Transmitter-receiver unit is mounted on the floor of the truck cab at right of driver's seat.

by Warner Engineering Co. of Montclair, N. J., which also handles maintenance of the equipment. Originally, a tower in the city was used as antenna support but it gave a coverage of only two miles' radius. Then, it was moved to the tower of Station WAAT, eight miles distant, and connected to the office by leased line. Now, the coverage extends over a radius of 15 to 20 miles.

Liberty engages in heating and air conditioning contracting, as well as fuel oil delivery, air conditioning and oil burner service. The fuel oil business was started in 1940, expanded to include heating and air conditioning in 1945, after Howard Dornbush returned from the war. The business was originally started by Sigmund Dornbush, who has been in the petroleum business since 1935.

Liberty now serves upwards of 5000 customers, utilizing an or-

ganization of some 60 people. There are separate sales departments for air conditioning and for heating, each with a manager and sales force. Service and installation department employs a manager and 18 mechanics. Liberty also has its own warehouse and fabrication facilities.

Acquisition of the entire system amounted to approximately \$10,000 including equipment and installation. Operating costs include leased line and maintenance of equipment. At the current rate of savings it is expected that the system will pay for itself within two years. After that, the radio benefits will become dividends.

### TECUMSEH CLOSES OAKLAND SERVICE PLANT

The Tecumseh service plant at Oakland, Calif. was closed Nov. 14, according to an announcement by H. M. Kelso, service sales manager of the company. This move was made necessary by the changing pattern in the field replacement operation.

The Oakland plant was opened five years ago as a branch service operation to help Tecumseh customers expedite the handling of field replacements West of the Rockies. The major part of this function was repair and replacement of complete systems. However, recently the industry trend is to replace only the compressor in the field and this has resulted in a lower volume of business for the Oakland plant. Rather than raise repair charges considerably, thus penalizing the ultimate customer, Tecumseh decided to terminate this operation.

Kelso pointed out that after Nov. 14 no materials can be handled through the Oakland operation. All compressors or condensing units after this date will be shipped direct from Tecumseh, Mich. or Marion, Ohio. Products requiring repair after the Oakland operation has been closed should be returned to either Tecumseh or Marion through normal channels.

**BUY FROM YOUR  
REFRIGERATION WHOLESALER**



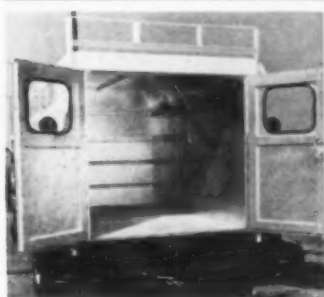
## FINISH THE JOB . . .

Continued from page 55

ample, has a special "bin" built into its longest section. Here are stored small fittings, screws, etc., where they can be obtained readily. In general, this side of the truck, because it is normally at the curb and hence most accessible, carries the supplies the installation men are most apt to need.

A long, upright section has adjustable shelves to allow the storage of various size materials, and a small section has room for a tool kit or for a torch outfit.

The opposite side of the truck body has compartments of similar



**WIDE STEP** at rear of truck enables workmen to load and unload installation tools easier and more quickly. Heavy corrugated floor prevents slipping. Shelves at both sides near ceiling allow for convenient carrying of small hand tools and supplies.

size, but does not have the bins for small parts storage. All of the compartments can be locked to prevent pilferage.

Inside, the truck body is one big storage space for power tools and any of the larger equipment needed in making installations. Bins along the top at both sides can be used for additional small items, leaving the floor open for larger materials.

An extra-wide step at the rear of the truck makes it easier to load and unload power tools and larger installation equipment. Floor of the inside section, and of the step, is of corrugated steel to prevent slipping.

The truck design has proved particularly applicable, Farr says, in speeding up the installation of packaged air conditioning systems; those where a packaged air

conditioning unit and perhaps a cooling tower are the principal items of equipment involved. Refrigeration Sales Corp. has four such trucks in operation at present, and hopes to have eight of them going by next spring. As a safety measure in case of overloading, all of the trucks have been fitted with oversize tires.

Although the company's principal purpose in purchasing the trucks was for installation use, they can readily be pressed into service for regular maintenance

jobs. For installations, the trucks are dispatched from job to job, with the main items of equipment delivered to the site from a central warehouse.

## MARLO APPOINTS HEWETT IN NEW JERSEY AREA

Marlo Coil Co. has announced the appointment of the John B. Hewett Co., Inc., Newark, as Marlo representative in the northern New Jersey area.

## New Arrival in Marsh "Serviceman" Family



An instrument  
you need

## The MARSH Serviceman TIMER

### IT SHOWS:

Total running time  
Total elapsed time  
on 24-hour dial



### 115 VOLT, 60 CYCLE MODEL

For testing smaller units with compressors of 3/4 hp. or less. Operates in series . . . Simply plug equipment into timer; timer into wall outlet.



### 230 VOLT, 60 CYCLE MODEL

For testing larger installations regardless of horsepower. Operates in parallel. Note well shielded alligator clips for attaching to motor terminals and power lines.

This great addition to the "Serviceman" line does a vital job supremely well. Its white hairline pointer shows total time of test; red pointer shows total running time. It is easier to read, use, and interpret than a recorder . . . has no charts or leaky pens to bother with . . . yet it is very moderately priced.

Two models (opposite) cover all conditions. Note sturdy case finished in attractive hammerloay gray with sharp white numerals on black dial . . . also suction-cup feet for firm placement without damage to finish. This is the instrument you've been waiting for. Write for details, or

See your Wholesaler

MARSH INSTRUMENT CO., Sales Affiliate of Jas. P. Marsh Corporation  
Dept. P, Skokie, Ill. • Marsh Instr. & Valve Co. (Can.) Ltd., 8407 103rd St.,  
Edmonton, Alta. • Houston Br. Plant: 1121 Northwell St., Sect. 15, Houston, Tex.

# MARSH

Refrigeration Instruments

GAUGES • WATER REGULATING VALVES • SOLENOID VALVES • HEATING SPECIALTIES

Circle No. 40 on Reader Service Card

# THE COMMERCIAL REFRIGERATION and AIR CONDITIONING APPLICATIONS MANUAL

Readers are invited to submit their problems to this department. Each letter of inquiry will be answered personally by the author. All problems should be clearly and completely stated and addressed to: COMMERCIAL REFRIGERATION AND AIR CONDITIONING, Manual Dept., 1240 Ontario St., Cleveland 13, Ohio.

## Unitary System Offers Many Advantages Over Multiplexing of Several Coolers on One Compressor

by Hugo C. Smith

**D**ESPITE the almost universal acceptance of the unitary job within recent years, there still are refrigeration jobs being installed by multiplexing a number of coolers on one large compressor.

It would seem that the refrigeration industry should have reached a stage in its educational and engineering services at which the multiplexing job of 50 or 20 years ago would be completely extinct. This type of job can no longer be justified from an economical standpoint due to the price reduction in recent years on the small hermetic compressor.

The unitary job with its individually engineered compressor, sized for each particular cooler or fixture that it serves, has the advantage in most instances of operating at a fairly constant back pressure. This results in improved humidity control, much closer temperature control and much better service conditions.

The multiplexed job operating on 3 or 4 fixtures must be sized for the total load. As the various fixtures are satisfied and the thermostatic valves cut off, the suction pressure drops to a point where extreme dehumidification and heavy coil frosting may result.

Recently we had occasion to see a specification written by a Federal agency for its own use, which specified a 10-hp refrigeration compressor to operate eight food boxes in a hospital, with no connected stand-by unit for use in case of a breakdown. This type of job is popular with the U.S. Navy, and probably is used because of the fact that on ship-board they prefer to run one large compressor with an auxiliary engine. Many Federal agencies, however,

use this same Navy specification without giving the slightest thought as to whether or not it makes good engineering sense to use this type of system where electric power is readily available.

This same specification also called for 4-step capacity reduction, which

### EAST MEETS WEST



**MOHAN T. ADVANI**, (left), managing director of the Blue Star Engineering Co. of Bombay, India, observes closely as **O. M. Sims**, president of Larkin Coils Co., points out some salient features of one of the company's products. Advani, who uses this equipment in his work in Bombay, visited the Larkin plant recently as part of a world trip to study manufacturing methods and systems. Advani's company is primarily engaged in industrial engineering. Indian industry, however, is not as specialized as in America, and his firm must see to the engineering of complete buildings, including the special production of all manufactured items used.

of course would not operate at all on the type of system specified. On any commercial refrigeration job of the self-defrosting type, capacity reduction results in continuous opera-

tion of the compressor, producing rapid frosting of the coils which eventually block the refrigeration effect.

This is due to the fact that the capacity reduction will cut out cylinders until the capacity of the system matches the heat loss of the coolers. The unit will then continue to run indefinitely. If it were good practice to run compressors indefinitely with a number of cylinders cut out, this type of job could be made to work by using some form of time clock or hot gas defrosting.

### Capacity Reduction Problem

Recently, we successfully employed capacity reduction in a 30-ton water chiller which was used in a circulating water system in a large hotel. Here, of course, frosting of the coils was no problem, due to the rapid circulation of the water. Generous sizing of the condensing unit allowed it to overpower the heat gain of the system while operating on its lowest stage of capacity reduction, so it would pull down and shut off.

There is no particular reason or justification for the multiplex installation when the unitary job is simpler, cheaper, and maintains much better storage conditions. Furthermore, in case of a breakdown all coolers do not go out of service at one time.

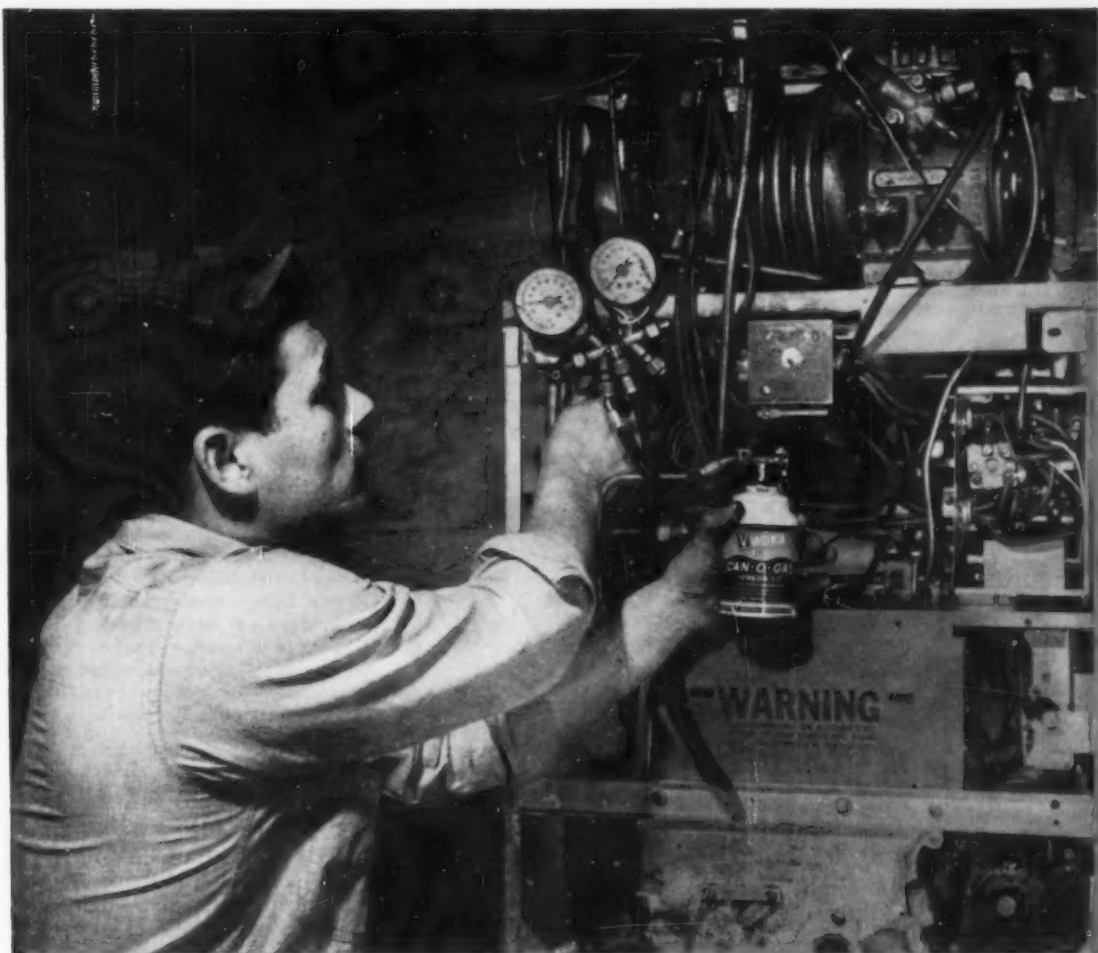
This same Navy specification referred to earlier often prescribes a stand-by condensing unit, elaborately cross connected with the other unit by valves so that theoretically, at least, it can be put in operation. This is regarded by many as complete protection against interrupted refrigeration service. This is not necessarily the case. A leak anywhere in this type of system can put it completely out of business regardless of the stand-by compressor.

### Duplexing Is the Answer

We do not mean to imply, by this discussion, that some form of capacity reduction is not very desirable.

Many coolers today, usually in the 5000 to 10,000 cubic foot class, are subject many times to extremely heavy product loads. If the condensing unit in such a system is sized to meet maximum loading conditions it will be too large for a nicely balanced job at minimum loading conditions.

As we have mentioned before, we feel that the ideal approach to jobs of this kind is the duplex system which utilizes two individual complete systems, operating independ-



## Easiest, quickest way to add a charge ... use Can-O-Gas

The service and maintenance trades have discovered that the popular refrigerants in throw-away cans are ideal (1) for charging water and beverage coolers; (2) freezer cabinets and automotive air-conditioning systems. They are especially suited for adding critical charges. No deposit—no empties to return. Can-O-Gas is precision filled to assure high quality and low moisture. Detachable opener tools (illustrated below) available at small cost.

Four Can-O-Gas refrigerants are now available. Sulfur Dioxide and "Freon-114"\* come in 16-oz. cans; "Freon-12"\* in a 15-oz. can; and "Freon-22"\* in the new 2-lb. size. "Virginia" also makes Extra Dry Esotoo, the refrigeration grade  $\text{SO}_2$ -V-Meth-L, methyl chloride specially prepared for refrigeration use—and distributes a complete line of Kinetic Chemical's "Freons." These are available in all popular cylinder sizes.

Ask your wholesaler for these fine products, or write Refrigeration Division, VIRGINIA SMELTING CO., Dept. 64, West Norfolk, Va.

\*T. M. Reg. U.S. Pat. Off., Du Pont's



ESOTOO • KINETIC CHEMICAL'S "FREON" REFRIGERANTS  
V-METH-L • CAN-O-GAS • PERMAGUM • PRESSTITE TAPE  
SUNISO REFRIGERATION OILS

Available in Canada and many other countries



"Fitzall" valve used on 15 and 16-oz. cans.



"Fitzall" valve used on 2-lb. can.



Clip-On opener is perfect where valve is not needed.

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# Exclusive time savers

U. S. Pat. No. 2,493,513

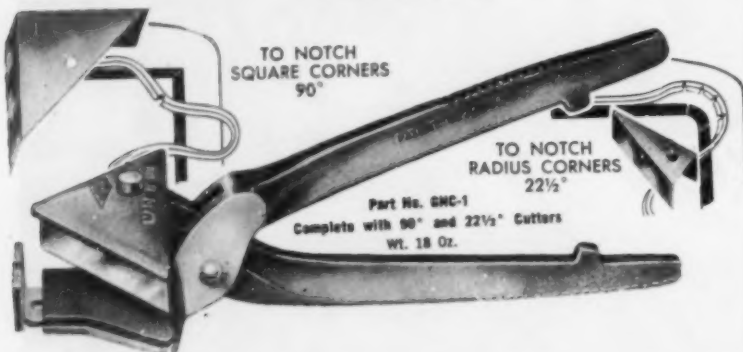
## 2 in 1 DOOR GASKET NOTCHER

WITH INTERCHANGEABLE CUTTERS FOR  
SQUARE OR RADIUS CORNERS

Makes gasket notching child's play. Just attach either the 90° or 22½° cutters and you're set.

- Change cutters in seconds.
- Adjustable guide for length of notch.
- Saves time on the job.
- One plier for both cutters.
- Less to carry.

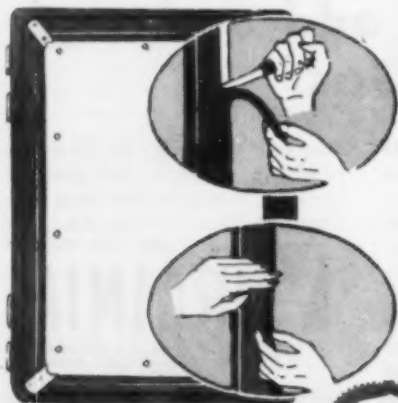
All guess work is taken out of gasket installation work. A center indicator line enables a 90° mitered cut to be located exactly at the point where the corner is desired. Plier type construction eliminates the need for pre-notching of gasket — saving time and spoilage. The 22½° cutter enables you to fit gaskets on refrigerator and freezer cabinets with radius corner doors... without removing the door. Made of heat treated aluminum — cast in a permanent mold to assure accuracy and long life.



## NU-BEAD The Original Replacement Door Gasket

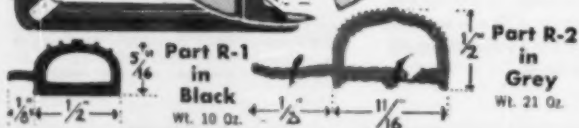
U. S. Pat. No. 2,702,415

NU-BEAD with the new improved adhesive backing does away with hours spent replacing door seals on Frigidaire, Coldspot and similar type refrigerator doors.



- INSTALLED IN MINUTES
- NO NEED TO DISMANTLE DOOR

Just cut away the deteriorated bead with a sharp knife or blade. Most all irregularities in the trimming is covered by the lip of the NU-BEAD gasket. Moisten special adhesive backing with gasoline or naphtha. Apply NU-BEAD along door, pressing it firmly in place for 5 to 10 seconds. NU-BEAD is made of the finest grade rubber and is supplied in 12 foot lengths.



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ently of one another on the same cooler. This cooler will maintain safe temperatures even with one system out of order. This system will respond to heavy loads by operating both compressors at once. Under normal duty, only one compressor operates at a time. This is accomplished by controlling the units with individual pressurestats set on identical settings.

There appears to be a need in the commercial refrigeration industry for a water-cooled, self-contained unit that the contractor could hang in a room in any given multiple or combination that he wished, running only water, drain, and power to each unit. This unit would not have to be made in as wide a range of sizes as present day condensing units. If 1, 2, 3, and 5-hp self-contained, individually controlled, water-cooled units were available, they could be applied to 80% of the coolers and cold storage plants in use today.

There are no engineering objections to using this type of equipment in above freezing coolers, and with labor rates for field installation being what they are, the advantages of such systems should be obvious.

### WEST COAST SERVICEMEN HEAR COPELAND REP.

More than 110 independent service contractors and refrigeration dealers heard John L. Zant, Copeland west coast representative, discuss applications and trouble shooting on hermetic motor-compressors in a recent series of west coast meetings.

Sponsored by Thermal Supply Co. of Seattle and Yakima, Wash., over 90 refrigeration men witnessed Zant's demonstration of hermetic field servicing procedures at meetings in the two cities.

In Spokane, more than 20 firms were represented at the meeting sponsored by Thermo, Inc., Copeland wholesaler.

### TEXAS DISTRIBUTOR NAMED BY USAIRCO

Technical Products Co., Austin, Texas, had been named distributor for its packaged air conditioning equipment by United States Air Conditioning Corp. The Texas firm will cover a territory including Travis County and north to Fort Hood.



## COPPER TUBE . . .

*Continued from page 33*

no problems in the field. However, if heavy duty bending requiring heat is needed, or if no heavy duty bending tools are available, the bends should be made on the manufacturer's premises.

Tube manufacturers go to a great deal of trouble to keep copper tube free from oxidation to insure the efficiency of a refrigeration system. Carelessness on the part of the service engineer may cause pressure difficulties later on. The supplier of copper tube can make irregular bends and take precautions to prevent the distortion of the bore. Having the proper equipment, he can compensate for a flattened cross-section and prevent wrinkling of the outer radius.

### Join Tube Carefully

Workmanlike joining of pipe and tube in the system is, of course, another important element in its overall efficiency.

Where copper tube is employed, two types of joints are in common use: flared and solder. Flared joints are used in practically all refrigeration work. In some instances, however, the solder joint which is almost universal in plumbing and heating work is employed, and the installer should be familiar with the techniques and advantages of both. Compression fittings also are extensively used by service engineers to make up long lengths of tube.

Hard copper tube cannot be flared. Soft tube, especially the smaller diameters, readily lends itself to flaring, and both the tools and method are quite simple.

### Use Proper Tools

The principal tools required are a sawing vise, a hacksaw or wheel cutter and flaring tools of proper size. After the tube has been cut to length and all burrs removed, the coupling nut is slipped over the end of the tube. Next, the flaring tool is inserted in the tube end and driven with a hammer until the tube end is expanded, or flared, properly for the style of fitting used. The fitting is now assembled and tightened with two wrenches,

one on the coupling nut, the other on the fitting body.

Be sure that all copper chips are carefully removed after the deburring operation is completed. This is easily done by tapping the end of the tube to allow the chips to fall out.

One of the simplest ways to flare copper tube is by means of a spindle-type tool. This device is designed to exert pressure on the tube end until flaring is completed. For general use such rotary tools are the easiest to use and give the best flare for all conditions. For very large diameters the procedure outlined above must be

### BUILT-IN COOLING



"THROUGH THE WALL" installations of room air conditioners are becoming increasingly popular in the southeast. The two 1-ton units pictured are in the living room of the Cuban home of Edelberto de Carrera, president of the Carrera Theatre Chain, Havana. The relaxed gentleman is Manuel Garmizo, engineer for Mitchell Distributors, Inc., Havana.

used, because a rotary tool is not available in the larger diameters.

The solder (or sweated) joint requires a bit more skill to make. When properly done, however, it is exceptionally strong and is equally suited to both hard and soft temper tubes.

The strength of a solder joint depends on the closeness of the fit between the outer wall of the tube and the inner wall of the fitting. This is so because the principle of the joint is based on capillary action: a very thin film of solder is drawn into the overlap and securely bonds the two surfaces together.

It follows that a loose fitting should never be corrected by flat-

tening the tube; in fact, where soft tube is being joined, even imperceptible distortions that may result from cutting should first be removed with a sizing tool. Furthermore, both tube and fitting must be free from burrs that might score the overlapped surfaces as they are assembled. In short, the fit must be extremely close and perfectly uniform because solder will not form a strong bond except where it is drawn by capillary attraction. This can only exist between very closely fitting surfaces.

### Clean Both Surfaces

Both surfaces must be thoroughly cleaned. Both the end of the tube and the inside of the fitting should be rubbed down to a smooth, shining finish with fine sand cloth or steel wool and immediately coated with flux to prevent tarnishing. Then tube and fitting should be promptly assembled to prevent their contact with any foreign matter.

Heat should be uniformly applied over the entire area of the joint until the metal is hot enough to melt the solder on contact. Then the solder wire is applied to the edge of the fitting (either above or below, for gravity plays no part in capillary attraction). Enough solder should be fed to penetrate all the way to the tube end, and it should show all around the end of the fitting.

### Wipe Off Excess Solder

After wiping off excess solder with a cloth, the fitting should be allowed to cool undisturbed. If all of these precautions have been observed, the joint will be actually the strongest point in the entire line.

In any air conditioning or refrigeration system, copper tube offers significant advantages in durability, strength and ease of installation. These advantages are enhanced by good workmanship in the making of bends and joints. Thorough knowledge of bending and joining techniques coupled with an artisan's pride in a job well done help to insure that the system will function in accordance with its design and will materially reduce expensive call-backs.

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REFRIGERATION WHOLESALER**

# COMMERCIAL REFRIGERATOR SALES NEWS

## Dealers Can Increase Earnings By Handling Own Financing, Says Wiedemer

**T**ODAY, more than ever before, the commercial refrigerator distributor is faced with the problem of an ever-increasing overhead and is constantly searching for methods by which to match this overhead with increased earnings. In the opinion of George F. Wiedemer, president of Cable-Wiedemer, Inc., Rochester, N.Y., there are three ways in which this can be accomplished: (1) cut overhead; (2) increase volume; (3) find additional means of increasing income.

Financing, Wiedemer feels, is one method by which the dealer can increase his company's earnings from the same amount of business. Properly used, he points out, financing also can increase volume.

"In our own organization," Wiedemer explains, "we have increased not only our volume but also our net earnings through the use of various financing arrangements. The fact that we operate heavily in the restaurant and institutional business has given us additional opportunities to employ several different financing methods.

"In my opinion," Wiedemer continues, "one of the finest ways to finance any sale is by the use of coin meters. When a sale is consummated and the salesman indicates the use of a meter we are willing to accept a minimum down payment. In the case of ice cubers, meat and bone cutters, slicers, and that type of product, we will install the item without any down payment, only the payment of the sales tax being necessary. Naturally, a good credit rating is essential. In the past three years we have had to repossess only two jobs where a coin meter had been installed.

"An increasing trend in our industry is the practice of customers to request that traded-out merchandise be used as a down payment. I am referring mainly to the customer who has purchased equipment that is not too old but is of a size that prevents his increasing his volume. The condition may be such that he cannot afford any additional down payment, and consequently we have been accepting orders of this type. Of course there must be a common meeting ground between the sales department and the credit department, but many friends can be made by going along with a customer who is willing to progress by this method.

"Along these lines we have

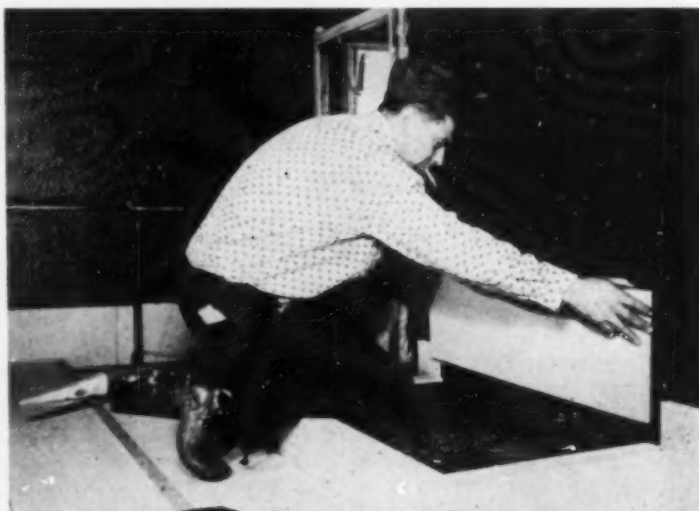
been getting more and more into the pyramid contract, in which equipment is added to the original contract after six months or a year of operation. While this practice might be illegal in some states, there doubtless are ways by which to surmount this obstacle.

"In financing equipment sales such as ours, we have found that the best and most profitable way is to handle your own financing. Good capital structure is necessary to do this. If you have the office personnel to follow up on delinquents and the many other odd jobs involved, you will find that the interest earned is actually better than the net earned from operations. However, a sufficiently large volume of business is necessary in order to do this profitably.

"Recently we have had several pieces of used market equipment that we have taken in trade, and we have sold much of this merchandise on contracts that we have financed ourselves. Not having to lay out any additional money for purchase of new equipment, we found that we were able to finance these contracts ourselves, thereby earning additional revenue.

"Many firms borrow large amounts monthly, at a specified

### FOOD DELIVERY TRUCKS NEED EFFICIENT INSULATION



**INSULATING EFFICIENCY**, resistance to water vapor transmission, light weight, and structural strength were the key factors which determined the selection of "Styrofoam" (Dow expanded polystyrene) for insulating the floor of all refrigerated wholesale delivery and ice cream truck bodies produced by Herman Body Co. of St. Louis, Mo. Because of this material's compressive strength of 20 lbs./sq.in., stringers and flooring are placed directly over the layer of rigid board type insulation, 4" of which is used in the wholesale bodies and 6" in the ice cream trucks.

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**KRAMER**

**THERMOBANK**

## Here are the major improvements

**A NEW HEAT SOURCE** - Instead of using only the sensible heat of the THERMOBANK, the new "L" THERMOBANK now utilizes both its sensible heat plus its latent heat of fusion by actually freezing a tube of ice around its reevaporator coil during the defrost. (The "L" stands for latent). This, coupled with significant improvements in the design of the reevaporator coil, gives the "L" THERMOBANK four to five times more heat storage for instant defrost and complete reevaporation.

**NO LIQUID REFRIGERANT TO COMPRESSOR** - With the vastly larger amount of heat now available in the "L" THERMOBANK, no liquid can return to the compressor during defrost. This is a singular and distinctive feature of the "L" system vastly different from any other automatic hot gas defrost system now available.

**CONSTANT CRANKCASE PRESSURE** - The "L" system maintains a predetermined low crankcase pressure, thus permitting

the use of standard low temperature compressors without danger of motor overloading during the defrost, or oil foaming upon resumption of the refrigeration cycle. The low temperature compressors are less costly since they deliver more Btu's per horsepower.

**NO EXTRA SUPERHEAT DUE TO REEVAPORATOR** - On larger systems the suction line by-passes around the THERMOBANK during normal operation, thus eliminating any superheat pick-up from the bank by the suction gases during normal operation. This is very important with F-22.

**"LOW-LOW" TEMPERATURES** - Extremely low temperatures are now achieved with the "L" THERMOBANK and a complete line of "Low-Low" systems are now available.

**NO WINTER PROBLEMS** - The "L" THERMOBANK can be housed in an unheated space, thus making possible the use of the "L" THERMOBANK in any location, even the arctic circle.

**KRAMER TRENTON CO. • Trenton 5, N.J.**

interest rate, and then when a note becomes due they periodically pay off all or part with several contracts written in the interim. This method is also very lucrative if you are doing a good volume, but it requires working closely with a bank.

"Another way to finance sales to the best advantage is to finance contracts through the local bank at whatever rate you desire—5, 6, or 7%—and then have the bank rebate to you monthly, quarterly, or at the end of the year. You can then allow these accumulated amounts to remain and take them when you wish, or use them for later financing. Many of the banks in our area, along with the distributor's cooperation, are using the 6% rate chart and are rebating 2% to the distributor. This of course puts all of the work in the hands of the bank, and eliminates much of your credit department detail.

"Recently we have had occasion to enter into three different lease agreements—one with a nationally known food catering firm for

several ice cubers to be delivered to different locations, one with a large dairy for several frozen food cases, and one with the same dairy in another new location catering to the drive-in customer. In each case, the entire contract was put on a lease agreement. A good line of credit with your bank is necessary for this type of financing, but it is a new gimmick and one that is very definitely profitable."

#### TYLER FORMS UNIT FOR FOREIGN SALES

Tyler Refrigeration Corp. has announced the formation of Tyler Refrigeration International, C. A. of Caracas, Venezuela, as a new subsidiary.

Jay Alvarez, formerly export manager for Tyler, has been appointed vice president and sales manager of the new company, which will have its headquarters at 1315 Lake St. in Niles. Anthony Perez, who has represented Tyler in Central and South America for many years, has been appointed

vice president in charge of Latin American sales and will soon take up residence in Caracas.

Other officers of the new corporation are Robert L. Tyler, president; George H. Mayhew, treasurer; and Sam D. Vander Weg, secretary. Factory facilities at Caracas are not planned at this time.

#### WEBER BUYS GRAND RAPIDS FIXTURE PLANT

The entire manufacturing facilities of Grand Rapids Store Equipment Corp., Grand Rapids, Mich., have been purchased by Weber Showcase and Fixture Co., Inc., of Los Angeles, according to joint announcement by Sidney G. Rose, chairman of board of Grand Rapids, and Karl Weber, president of Weber Showcase.

The plant, consisting of approximately 500,000 sq. ft. of manufacturing space and modern machinery, will be utilized for the complete manufacture of Weber equipment.

### MR. DEALER! there's BIG MONEY FOR YOU! ... when you sell this brand NEW PINNACLE SELF-CONTAINED SELF-SERVICE CASE...



Yes, you'll not only make a substantial profit, but you'll be proud to install this outstanding value in Self-Service Cases... and your customers will thank you long after you have sold them! And here's time-saving news for you, Mr. Dealer! It's simple to install—just connect compressor and lighting system and your job is done! What's more—you'll never get a complaint because

this PINNACLE self-contained Self-Service Case is constructed of only quality materials to assure efficiency and long, uninterrupted service. Then too, its finish of Lifetime Porcelain remains white indefinitely—never turns yellow or peels!

- All three shelves refrigerated! • Goes through 36" doorway!
- Has modern fluorescent lighting! • Large storage and display areas! • Low operating cost! • Available in 6-8-10 foot lengths!

### BIG PROFITS FOR YOU, MR. DEALER!

A few Pinnacle Territory Franchises are still available. Wire or write today for full information and illustrated literature!

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### Better on "1001" Pumping Duties

Capacities  
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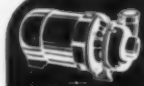
Heads  
to 500 Ft.



APCO Two-Stage Turbine Type Pump for High Pressure Service

Apco—the pump with but one moving part, the impeller—is famous for long-lived, efficient performance on small capacity, high head duties. Available in Single Stage, Two Stage and 4-Stage Tandem for high pressures—and Water Jacketed for high temperature and highly volatile liquids.

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DECEMBER, 1955 • COMMERCIAL REFRIGERATION



## CORY BUYS ASSETS OF MITCHELL FIRM

Cory Corp. has purchased all capital stock of The Mitchell Mfg. Co., and has merged the two companies into "the world's largest manufacturer of room and packaged air conditioning equipment," according to J. W. Alsdorf, Cory president.

Effective date of the acquisition was Nov. 9. Purchase price was not disclosed but assets of the Mitchell company were estimated at more than \$3 million.

Mitchell will continue to operate as it has in the past, but as a wholly-owned subsidiary of Cory. As an independent division, Mitchell will compete with Cory in the sale of air conditioning equipment, Alsdorf said.

No personnel changes are contemplated, except that A. N. Pritzer, chairman of Cory, will occupy a similar position for the Mitchell subsidiary, and Alsdorf will be president of the two firms. B. A. Mitchell will step down as president of that company but will serve in an advisory capacity.

Otherwise, Alsdorf said, Mitchell will be maintained under the same management, sales and distribution organization as now exists. Current Mitchell dealers and distributors will remain the same and will operate under the same policy as in the past.

## "HEATER" DROPPED FROM WILLIAMSON CO. NAME

Stockholders of Williamson Heater Co., Cincinnati, have approved a change in the company name to The Williamson Co.

Activities of the company in the central residential cooling equipment field, plus the addition of other products not related to heating, made the change in name desirable, according to president W. L. McGrath.

The company, in business since 1890, has plants in Cincinnati and in Madison, Ind.

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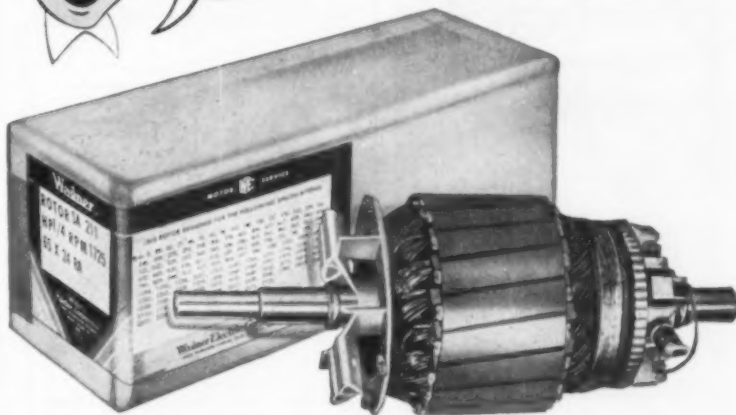
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When repairing Wagner fractional horsepower motors, you'll save time and money by replacing the worn-out rotor with a Wagner Standard Rotor. This way, your winders are free for bigger and more profitable jobs.

Special shafts are no problem. You can easily remove the shaft from the Standard Rotor and replace it with the special one.

And there's no guesswork in finding the rotor you need for your motors. Wagner K and M "spec" lists, when used with the "tell all" label on the rotor package assure the right choice every time. You'll find the "spec" lists in Catalog MU-40, which is yours for the asking.

It's wise to carry a stock of Wagner Replacement Motors



They come in handy for emergency use when your customer needs immediate service and they're easy to sell as replacements for motors "too far gone" for repairs.

Be sure to get the Electrical Service Catalog MU-40

Every repair shop needs this valuable help. It gives you the catalog number and price of all Wagner Motor parts. It's yours for the asking.



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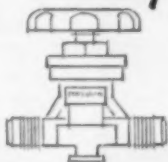
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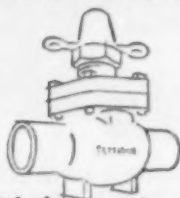
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yourself... ask for  
these "Trouble free"  
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valve & fittings co.  
pittsburgh 26, pa.

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## CONTRACTORS ...

Continued from page 46

Commissioners of the District of Columbia.

The action was taken by the Board of Commissioners of the District of Columbia, following a long series of hearings.

"Under these rules and regulations, refrigeration and air conditioning contractors, master refrigeration and air conditioning mechanics, and master refrigeration and air conditioning mechanics limited, will be licensed," declares Robert F. Cogswell, director, Department of Occupations



and Professions, Government of the District of Columbia.

"The board decided that it would not be necessary, at least for the time being, to license journeyman refrigeration and air conditioning mechanics," Cogswell declared. "It was definitely decided that apprentice refrigeration and air conditioning mechanics will not be licensed."

L. L. Carter, president of the Refrigeration Trade Association of America, which had been active in attempting to get passage of new regulations, commented that under the new District code, "refrigeration contractors and mechanics are legally authorized to work from a fused switchbox installed by a licensed electrician and from a hand shut-off valve to a trapped drain installed by a licensed plumber."

"The boundaries of 'refrigeration and air conditioning work' are

for the first time clearly spelled out. Previous to the adoption of the licensing regulations, the contractors and mechanics doing refrigeration and air conditioning installations and repairs did so by the grace of the inspectors of the electric and plumbing departments. They previously worked in technical violation of plumbing and electrical licensing regulations".

## CONTRACTOR EXPANDS DEPARTMENTAL SETUP

Charles Simkin & Sons, Inc., New Jersey mechanical contracting firm, has created several new departments in an effort to streamline its industrial heating, ventilating, air conditioning and process piping services. The reorganization is designed to speed the handling of estimation, bidding and engineering, and to facilitate job control. Administrative personnel named were: Joseph Dobransky, field superintendent; Alexander Sage, vice president in charge of engineering; Robert Solmor, chief piping engineer, and Edward Greenwald, chief engineer.

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for every Refrigeration  
and Air-Conditioning  
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1090 SPRINGFIELD ROAD, UNION, N. J.  
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ENGINEERS AND MANUFACTURERS OF REFRIGERATION  
AND ENVIRONMENTAL TEST EQUIPMENT

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## YOUR SHOP CAN SELL . . .

Continued from page 28

The tool room is finished in light gray with a white ceiling to provide extra reflective brilliance to the room's fluorescent lighting. Two work benches were installed, facing each other across the room. On the walls along three sides of the room, a "permanent place for everything" was set up.

Each peg, hook, bracket, or rack for various tools is identified by number, with the same number grooved into the tool which should occupy the space. With more than 130 types of hand tools in regular use in the shop, this numbering system (plus the fact that the mechanic leaves a check on the hook or rack to indicate that he has the tools) has guarded against loss and annoying delays in repair operations.

Typical of the room's neatness is the six-section storage unit for copper tubing in the upper right hand corner of the tool room. Built of heavy plywood with steel trim, the unit accommodates cop-

per tubing all the way from 1/4" to 2" diameter with rolls held in place by a slightly raised lip on the lower shelf. Elevated well above the rest of the room, this tells at a glance the amount on hand in each size of tubing, and insures that extra stock will be ordered as needed.

Holland has divided the shop area into specific sections, and cleaning up each one is the responsibility of the mechanic assigned to it. Every man uses cleaning compounds, scouring powder, and sweeping compounds to clean up after each job. Part of the kit of tools which each mechanic brings to the job is a pail, set up



to catch as much of these floor-staining liquids as possible.

Shop walls are done in grey, the ceiling in white, with all-metal storage shelving, wheels on almost every piece of equipment for ready portability, and an intensified overhead fluorescent lighting system, to provide a minimum of 50 foot-candles on every square inch of working space.

This sort of housekeeping requires an extra six to eight man-hours per week, but Holland has found that it pays glittering dividends in the form of customer good will and appreciation.

When a customer tells friends or business associates that "Refrigeration Equipment's shop is as clean as a hospital operating room," a lot of curiosity and prestige are set up.

**Your Customers'  
Best Buy. . .**

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PRODUCTS**

**BEVERAGE COOLERS**

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(56 cases 12 oz. - 8 ft. cooler!)

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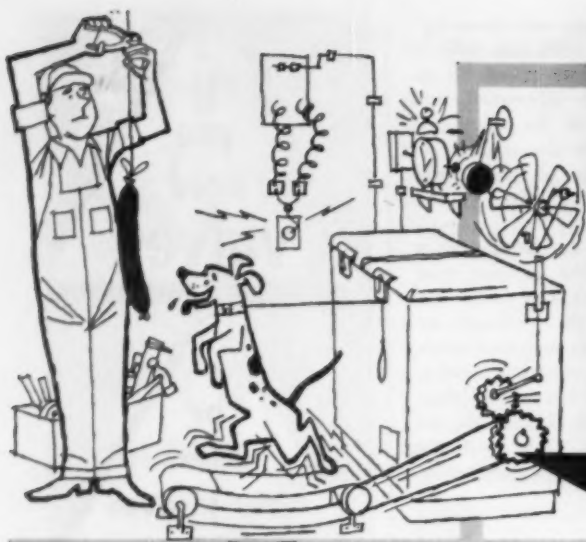
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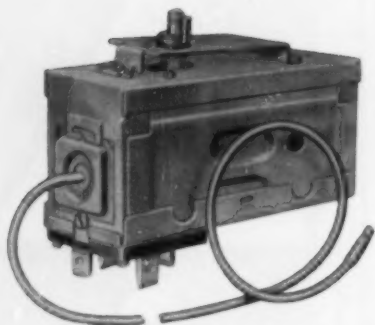
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pittsburgh 26, pa.

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Simpler  
way...*



811-1628 Control

## Ranco Controls

for exact automatic defrost replacements

Stands to reason that the *exact* automatic defrost replacement saves you installation time . . . earns you a neater profit on a neater job. That's why it's wise to specify a Ranco Control for every replacement. You save time, you save money . . . you save a customer.

See your Ranco wholesaler for the right control. Install Ranco . . . to be sure.

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# Ranco Inc.

COLUMBUS 1, OHIO

WORLD'S LARGEST MANUFACTURER  
OF REFRIGERATION CONTROLS



## THE SERVICE MAN'S DEPARTMENT

# HERE'S HOW!

### Air in the Wrong Place Can Prove Costly

Some engineers in charge of ice making and refrigerating plants give too little attention to the question of non-condensable gases, principally air, which are frequently found to exist in the system.

Then again, there are some who still have a hazy notion about the effect of air, or other non-condensable gases, when present in refrigerating system, and therefore do not begin to appreciate the economic waste caused by the pres-

ter until the easily recognized cracking sound was heard which indicated that ammonia was escaping into the water and that all

ference in the values arrived at by different authorities, this difference is not great for comparable conditions and all point conclusively to the inescapable fact that excess condensing pressures increase power cost and reduce capacity.

It is not at all unusual to find plants operating with condensing

### I DO IT THIS WAY

**W**HEN setting a pressure control on a condensing unit in a noisy location, where 5 or 6 units are running at one time, it is usually necessary to remain near the unit to know when pressure closes the control. To avoid this loss of time on the job, I've worked out a visual signal that lets me know when the control closes, enabling me to work on adjacent units in the meantime. The signal consists of a 220-volt light bulb that is screwed into the plug fuse in the condensing unit's disconnect switch. When pressure control is closed, current runs through motor and lights lamp, indicating that pressure setting is as desired.

Frank L. Danek  
Owosso, Mich.

ence of any gases in the system that cannot be reduced to a liquid state.

Different methods have been employed for the removal of air from the system, most of which consisted of opening purge valves located on condensers, or other high points in the high pressure side of the plant, and allowing the air to escape in a bucket of wa-



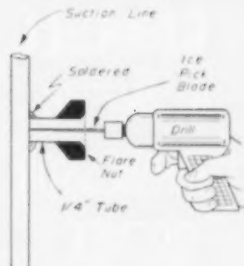
**WANT TO EARN \$5?**

You don't have to be a literary genius to pick up a fast five-spot. All you have to do is jot down some of the shortcuts you've developed in your maintenance or installation work and send them to Here's How Editor, Commercial Refrigeration and Air Conditioning. If the Editor votes "yes" on your contribution, your \$5 will be paid promptly when your maintenance tip is published in the magazine. Let's hear from you!

of the air that had accumulated at the high points in the system had been removed.

This is known as the "hand method of purging" and has been followed for many years. Some times the engineer did not have time for completing purging and would open the purge valves wide, or nearly so, for the last few minutes of the operation to make sure that everything that could not be condensed was removed. This, while effective, had the disadvantage of losing large quantities of ammonia.

A great many investigations have been made in recent years to determine just what effect excess pressure had on power consumption, and while there is some dif-

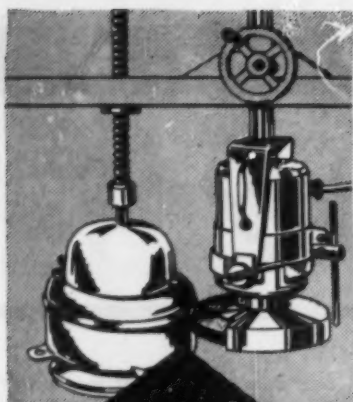


**HERE'S AN easy way to tap a sealed unit.** Merely cut a piece of 1/4 tubing about three inches long, flare one end, slide a 1/4" nut on the tube and then silver solder the other end to the suction or highside line. Insert an ice pick blade into an electric drill and bore a hole in the line through the tube you have soldered to it.

This process doesn't take much pressure, avoids drilling, and saves hammering the line shut. Flared end of the gauge line can be plugged when not in use.

Leslie Evans  
Phoenix, Ariz.

pressures anywhere from 10 to 35 pounds above that which should obtain and which is the direct result of air in the system and not to dirty condensers or water supply which obviously also effect condensing pressures.



# ONE HERMETIC Repair Job per Week will pay for your FRANKELL HERMETIC COMPRESSOR OPENER \*

Simple to operate. Compact, semi-automatic machine that can easily open any compressor up to 20" in diameter, regardless of the location of weld.

Millions of hermetics in use. Thousands in need of repair. The Frankell liberal payment plan for the compressor opener ... helps you obtain your share of this profitable business.

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(\*Pat. Pend.)

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STATORS AVAILABLE  
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**FRANKELL MFG. CO.**  
1074 HOME ST. • NEW YORK 59, N. Y.

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## TIME CONTROLS . . .

*Continued from page 35*

During the normal cycle the normally closed contact operated the compressor through the compressor thermostat; through the normally open contact is wired the heater load. During defrost cycle these contacts transfer, and the compressor is cut off and the heater is turned on. The length of the defrost cycle is determined by the setting on the cam segment of this unit, which may be adjustable from 15 minutes to 120 minutes.

These momentary contact type of controls have offered an inexpensive simple method of controlling hot gas or electric heat systems. However, the length of these cycles are set at the time they are installed. If the conditions of defrost are changed, the time switch will not change with it. Therefore, they are not adjustable unless the installer makes an adjustment either in the number of

cycles required or in the cam segment.

This is quite important, as there are many variables in defrosting. Almost all defrost systems are a series of compromises. There does not seem to be one system which is entirely satisfactory, although there are types of defrosting which are better adapted for particular purposes.

An additional method of defrosting is the water spray defrost system. This consists of cascading water over the coil surface for a very short time, then draining water from the piping before freezing can occur. The amount of heat available in ordinary tap water is sufficient to defrost the coil in direct contact with the water. The defrost cycle for a water spray defrost is a rigid sequence of operations.

1. Stop the fan and compressor.
2. After a short delay for the fans to stop, open the water valve for approximately 5 minutes.
3. Allow the water to drain off; then restart fans and refrigeration.

In Fig. 5, we have a control especially designed for this application. This type of control has a dual dial. The outer dial revolves once every 24 hours and the inner dial revolves once every 60 minutes.

This vernier type of arrangement allows for very short accurate cycles. It also allows for uneven cycles which are completely adjustable without relation to the other cycles. It is possible to get one cycle every 24 hours or one cycle every hour.

This use of dual dial control is still in its infancy, as the number of combinations of these dials is infinite. It is possible through the use of a dual dial control to get any type of cycle that is required.

## Why Guess?

...when you can be sure with

## LIQUID EYE®

The industry-accepted indicator for all refrigeration purposes.



### LIQUID EYE "100"

in 1/4" and 3/8" flare and O.D.S. sizes in the 100 Series.



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in 1/2" and 3/4" flare and O.D.S. sizes in the 200 Series.

**LIQUID EYE MEANS:** perfect refrigerant visibility • state-thru flow • leak-proof • high safety factor • spring loaded gaskets • standard wrench flats • instant analysis of refrigerant condition.

Sold by leading Wholesalers. Send for Catalog D-55, covering the complete Allin Line.



**Allin MANUFACTURING COMPANY**

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Circle No. 59 on Reader Service Card

## CENTURY ADDS NEW BIRMINGHAM OFFICE

Opening of a new district office in Birmingham, Ala. has been announced by Century Electric Co. The new office, managed by N. Cardella, is at 831 North 19th St. Cardella is formerly of Century's Atlanta branch office.

## WHOLESALE EXPANDS SALES ORGANIZATION

Several organizational appointments were made recently by Refrigeration Equipment Co., Kansas City, Mo., refrigeration wholesaler. Added to the company's sales department were Roy B. McCrady, sales manager; Warren S. Clark, assistant sales manager and application engineer; and W. L. (Mickey) Goetz, industrial sales. Also named was Jerome Black,



R. B. McCrady

W. S. Clark



W. L. Goetz

J. Black

company comptroller, who now assumes additional duties of office manager.

The firm has purchased the property adjoining its present warehouse, according to president E. L. Tramposh, and plans to construct additional warehouse space. The proposed addition will provide a total of 15,650 sq. ft. of warehouse space, plus a company-owned parking lot.

## WIDOW OF FOUNDER NEW STEWART HEAD

Mrs. Anita S. Crampton has been elected president of Stewart Industries, Inc., formerly High-side Chemicals Co., following the death of her husband, David Crampton, who founded the company 18 years ago. Laurence V. Gardner continues as vice president and general manager. There are no changes in policies and methods of operation.

## OPPORTUNITIES

(Classified Advertising)

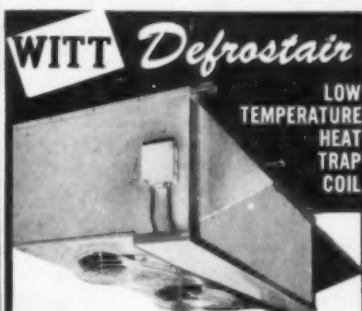
Rates: for "Positions Wanted," \$4.50 minimum, limit 25 words. For all other classifications, \$8.00 minimum for 25 words or under, each additional word 20¢. Boldface type or all capitals, \$10.00 minimum for 25 words or under, each additional word 25¢. All classified advertising payable in advance.

### EQUIPMENT AVAILABLE

**NAMEPLATES**—specially manufactured for air conditioning and refrigeration requirements. Use these low-cost 2½" x ¾", METAL nameplates for labeling and identifying your installations. Over 100 standard refrigeration and air conditioning wordings available for immediate shipment. No minimum order required. FREE samples, quotations. Catalog available covering metal or engraved bakelite nameplates worded as you specify. Numbered valve tag information included. SETON NAMEPLATE CO., Dept. CR, 394 Central Ave., New Haven 15, Conn.

### HANDLES HEAT PUMPS

Edison Cooling Systems, Inc. has been franchised to handle G-E "Weathertron" heat pump sales and service in Manhattan, Bronx, and the lower part of Westchester county.



### DEFROSTS AUTOMATICALLY

FOR FRESH MEAT ROOMS BELOW 34°F, FOOD STORAGE, FOOD FREEZING, ICE CREAM STORAGE, INDUSTRIAL LOW TEMPERATURE APPLICATIONS.

Defrostair's patented heat trap system takes advantage of the fact that warm air rises and can be trapped under a hood. For example, move your hand a few inches above a lighted candle and only a small amount of heat is felt. Now place a metal container over the candle. In a matter of minutes it is extremely hot because the heat is confined under the canopy or hood.

Witt Defrostair patented heat trap coil requires only a low cost single pole, double throw time clock for complete automatic defrosting. Easy low cost installation, requires no re-arrangement or special plumbing. Available in 14 models ranging in BTU capacities of from 3800 to 38,000 at 10° T.D.

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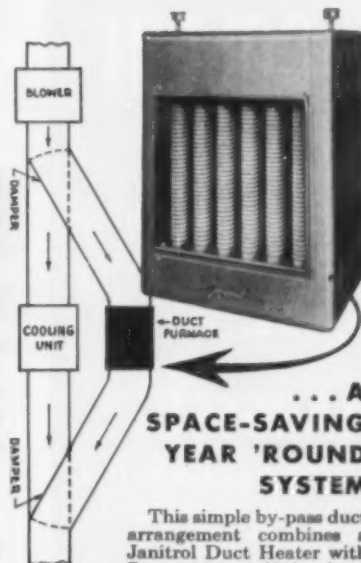
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## Why experts prefer Janitrol Duct Heating for year 'round systems

Cooling experts know the Janitrol name means dependability and quality. The Janitrol Gas-Fired Duct Heaters install fast in either heating and/or cooling systems. They have a proved record of amazing durability . . . since 1940, in over a million heat exchanger tubes, less than ¼ of 1% have been replaced for any cause!

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### ... A SPACE-SAVING YEAR 'ROUND SYSTEM

This simple by-pass duct arrangement combines a Janitrol Duct Heater with Summer conditioning. Dampers are shown in Winter position to by-pass cooling coil.



Janitrol products are engineered by Surface, makers of the famous furnaces that heat most of the products of American industry.

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DIVISION

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**PROFITS  
LOAD UP  
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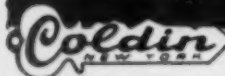
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**THERE'S A CABINET AT A  
PRICE HE WANTS TO PAY!**

The powerful Coldin line can be your key to new and larger volume in commercial refrigeration sales. Coldin has all the features, all the improvements retailers look for in cabinets.

**COLDIN a franchise that means Profits! We like to tell you more about it. Wire or write and we'll get together.**



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**2800 Webster Ave., N. Y. 58, N. Y.**

**Circle No. 62 on Reader Service Card**

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# "TICKETS" TO PROSPERITY

 <p><b>MODEL 205C</b> — adjustable superheat. F12, F22, Methyl. Capacity: 2 and 3 tons F12.</p>	 <p><b>MODEL 206C</b> — fixed superheat. F12, F22 or Methyl. Capacity: 0 to 1 tons F12.</p>	 <p><b>MODEL 207C</b> — adjustable superheat. F12, F22 or Methyl. Capacity: 1/2 and 1 ton F12.</p>	 <p><b>MODEL 208</b> — fixed superheat and pressure limit. F12, F22 or Methyl. Capacity: 1/2 and 1 ton F12.</p>	 <p><b>MODEL 209</b> — adjustable pressure limit and superheat. F12, F22 or Methyl. In 1/2, 1, 1 1/2 tons F12.</p>
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## THERMOSTATIC EXPANSION VALVES

## AUTOMATIC EXPANSION VALVES

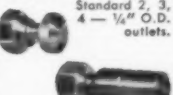
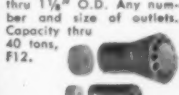
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 <p><b>MODEL 65</b> — for all non-corrosive refrigerants. Sizes: 3/8 x 1/2 &amp; 3/4" sliding seat (65 to 200 psi, 165 to 300 psi); 1, 1 1/4" double ceramic seat (70 to 170 psi, 140 to 240 psi).</p>
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*What?*

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*Where?*

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